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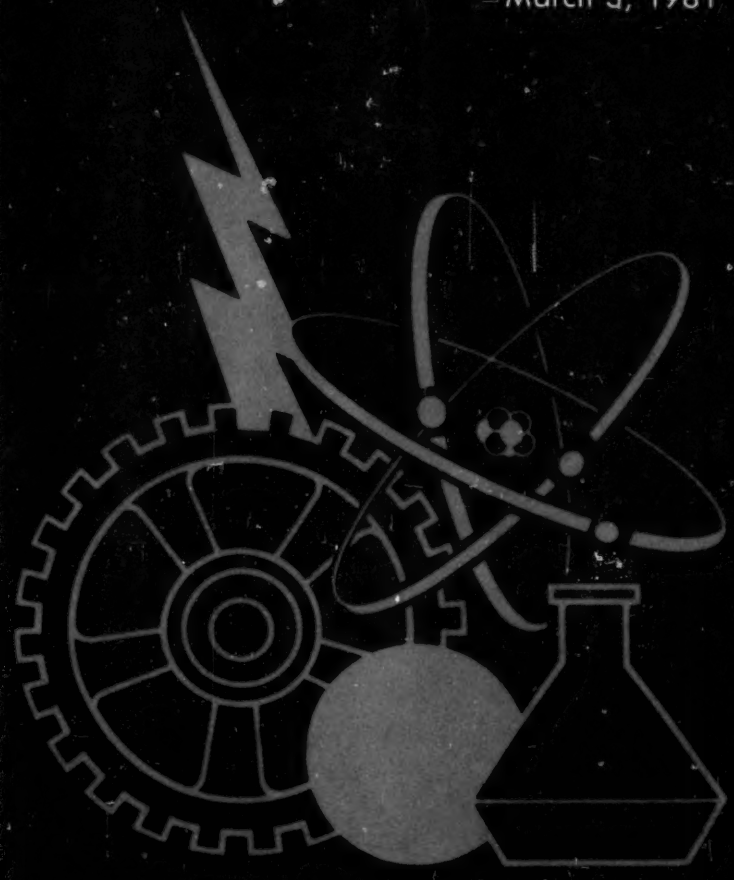

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 3, 1981 Volume 1004 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of Dec. 9, 1980.

Note that the international fees have been increased as of Jan. 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	$300.00
International fees:	
Basic fee (first 30 pages)	$265.00
Basic supplemental fee (for each sheet over 30)	$ 5.00
Designation fee	$ 64.00

SIDNEY A. DIAMOND,
Jan. 13, 1981. *Commissioner of Patents and Trademarks.*

Trademark Opposition and Cancellation Proceedings: Compulsory Counterclaims

37 CFR Part 2

AGENCY: Patent and Trademark Office (PTO), Department of Commerce.

ACTION: Final rule.

SUMMARY: This amendment of the rules of practice in trademark cases provides explicitly for compulsory counterclaims under stated conditions in opposition and cancellation proceedings before the Trademark Trial and Appeal Board in the Patent and Trademark Office. The amendment establishes the authority for a pre-existing practice which has been held on judicial review to be unauthorized by the existing rules.

EFFECTIVE DATE: April 1, 1981.

FOR FURTHER INFORMATION CONTACT: David J. Kera, Member, Trademark Trial and Appeal Board, Commissioner of Patents and Trademarks, Washington, D.C. 20231. (703) 557–3551.

SUPPLEMENTARY INFORMATION: On Apr. 16, 1979, notice was given in the Federal Register (44 FR 22478) of a proposal to amend two sections of Title 37 of the Code of Federal Regulations relating to trademark opposition and cancellation proceedings. Interested persons were invited to comment on the proposal by May 15, 1979. Twenty-six written letters and statements were submitted. Careful consideration has been given to all comments received, and the proposal is being adopted with certain changes.

The regulations adopted involve both sections that were proposed to be revised, amended or added—namely, §§ 2.106 and 2.114.

This amendment has been reviewed pursuant to Executive Order 12044 and found to have no major economic consequences and therefore does not require a regulatory analysis.

The text of the rules will be reproduced in the Patent and Trademark Office Official Gazette in about two months with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. The letters and written statements received and a summary and analysis of the comments are available for public inspection in Room 11E10, Crystal Plaza, Building 3, 2021 Jefferson Davis Highway, Arlington, Va.

PURPOSE OF RULES

The purpose of the rules that are being adopted is to make it compulsory for a defendant to file a counterclaim for the cancellation of the registration pleaded by the plaintiff in an opposition or cancellation proceeding if the defendant wants to challenge the validity of the plaintiff's registration and if the grounds for a counterclaim exist when the answer to the notice of opposition or petition for cancellation is filed. When a defendant in an opposition or cancellation proceeding desires to eliminate the plaintiff's registration as a ground upon which the opposition or cancellation is based, a petition by the defendant to cancel the plaintiff's registration is mandatory because the validity of the plaintiff's registration cannot be questioned so long as it remains uncancelled.[1]

The effect of the rules is that if a counterclaim is not filed as provided by the rules, the applicant or respondent will thereafter be barred from seeking to cancel the registration pleaded by the opposer or cancellation petitioner in the prior proceeding on any ground which existed at the time when the answer was filed.

The rules that are being adopted avoid piecemeal litigation of a multiplicity of actions and counteractions relating to a single conflict or controversy. For instance, when the issue is likelihood of confusion and a question is raised whether the plaintiff's registration should remain on the register or should be cancelled, that question must be decided before there can be a determination of the issue whether the defendant's mark involved in an opposition proceeding should be registered or whether the defendant's registration involved in a cancellation proceeding should be cancelled.[2] To permit a defendant to litigate a first case to a decision, which by hypothesis the plaintiff would win, and thereafter permit the defendant to petition for the cancellation of the plaintiff's registration, would allow a proliferation of proceedings and would meanwhile result in the first plaintiff's registration remaining on the register when it might be an improper registration. If the party which was the defendant in the first case should win the second case and thereafter file a new application to register its mark, there would have been a substantial period of time when the register would not have reflected the true rights of the parties. This situation would be detrimental to the public, which searches the register and relies upon the rights recorded there when deciding upon the availability of new marks for adoption and use.[3] Since a claim of invalidity of a registration of a mark is logically related to the issue of enforceability of the registration in an opposition or cancellation proceeding, the consolidation in one proceeding of all claims determinable by the Patent and Trademark Office arising out of a particular conflict will avoid unnecessary delays and unnecessary proliferation of proceedings to decide what is a single controversy. By adopting the rules, the Office is taking steps to have the pleadings of the parties present the entire controversy at one time and to have discovery, trial, final briefs and oral argument in one proceeding instead of several. Both the parties and the public will benefit from the more efficient procedure established by the rules being adopted.

COMPULSORY COUNTERCLAIMS

Amended §§ 2.106(b) and 2.114(b) provide that an answer may contain any defense, including the affirmative defenses of unclean hands, laches, estoppel, acquiescense, fraud, mistake or prior judgment. When pleading special matters, the Federal Rules of Civil Procedure are to be followed. A reply to an affirmative defense need not be filed. However, a defense attacking the validity of any one or more of the registrations pleaded in the opposition or petition for cancellation is a compulsory counterclaim if grounds for such counterclaim exist at the time when the answer is filed. If grounds for a counterclaim are known to the applicant or respondent when the answer to the opposition or petition is filed, the counterclaim must be pleaded with or as part of the answer. If grounds for a counterclaim are learned during the course of the opposition or cancellation proceeding, the counterclaim must be pleaded promptly after the grounds therefor are learned. A counterclaim need not be filed, however, if it is the subject of another proceeding between the same parties or anyone in privity therewith.

Amended §§ 2.106(b) and 2.114(b) further provide that an attack on the validity of a registration pleaded by an opposer or petitioner will not be heard unless a counterclaim or separate proceeding is filed to seek the cancellation of such registration. A pleaded registration is a registration identified by number and date of issuance in an original notice

of opposition or petition for cancellation, or in any amendment thereto made under Rule 15, FRCP. The provisions of §§ 2.111 through 2.115, inclusive, are applicable to counterclaims and a time, not less than thirty days, will be designated within which an answer to a counterclaim must be filed. Upon motion by a party, the times for pleading, discovery, testimony, briefs or oral argument will be reset or extended when necessary to enable a party fully to present or meet a counterclaim or separate petition for cancellation of a registration.

In response to some of the comments, §§ 2.106(b)(1) and 2.114(b)(1) have been changed by the inclusion of a sentence to make it clear that they are applicable only when a pleaded registration is identified by number and date of issuance in an original or amended notice of opposition or petition for cancellation. Since a party may not rely on a proceeding being prosecuted by a stranger, §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) have been modified from the version published for comment so as to state explicitly that the separate proceeding for the cancellation of an opposer's or cancellation petitioner's registration which would obviate the need for a counterclaim must be between the same parties or anyone in privity therewith. It should be noted that the Trademark Trial and Appeal Board has control over its docket so that a case may be suspended at the request of a party when a separate proceeding in a more advanced stage may render a case moot, thereby avoiding unnecessary litigation.

Two comments stated that there is no basis in the Trademark Act for the compulsory counterclaim rules in amended §§ 2.106(b)(2) and 2.114(b)(2). Several related comments were to the effect that these sections would operate to bar a claim against a plaintiff's registration prior to the time when such a claim would be barred by section 14 of the Act.

Initially, it should be noted that the presence of Rule 13(a) in the Federal Rules of Civil Procedure shows that there is no constitutional impediment to a compulsory counterclaim rule of procedure. Moreover, it is considered to be within the power of the Commissioner of Patents and Trademarks to adopt compulsory counterclaim rules, which are not inconsistent with any provision of the Trademark Act, as part of the rules and regulations for the conduct of proceedings in the Patent and Trademark Office, as authorized by section 41 of the Trademark Act.

Courts have long recognized that a compulsory counterclaim rule operates to compel a party to raise a claim at a time chosen by its opponent.[4] This necessarily means that a party may be compelled to raise a claim, or to lose it, long prior to the time when a statute of limitations would absolutely bar the claim. Sections 14 (a) and (b) of the Trademark Act have been interpreted as a statute of limitations barring claims against certain registrations on particular grounds more than five years after a specified event (the issuance or republication of a registration under the Trademark Act of 1946) has occurred.[5]

As there is nothing inconsistent between a statute of limitations and a compulsory counterclaim rule, so there is nothing inconsistent between a statutory cause of action for which there is no statute of limitations (sections 14(c), (d), and (e) of the Trademark Act) and a compulsory counterclaim rule insofar as there is a particular controversy involving particular marks and specified goods or services. The effect of amended §§ 2.106(b) and 2.114(b) is simply to require the timely assertion of a claim, if one exists, under sections 14(c), (d), and (e) of the Trademark Act. If a plaintiff's registration is invalid, it is to the benefit of the public as well as to the defendant to have it promptly removed from the register, and it is to the advantage of the parties and the board to have the issue litigated in one case rather than in a protracted series of cases. Since there is no provision of the Trademark Act with which the compulsory counterclaim rules are inconsistent and the rules are for the conduct of proceedings under the Trademark Act, it is concluded that the Commissioner possesses the statutory authority under section 41 of the Trademark Act to adopt the rules.

Although one comment stated that amended §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) are broader than the compulsory counterclaim rule of Rule 13(a), FRCP, it is the position of the Patent and Trademark Office that amended §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) comport with the practice on compulsory counterclaims announced and followed by the Federal Courts in applying Rule 13(a), FRCP.[6] Assuming that the comment is meant to point out that the plaintiff's right to prevent or cancel a registration and the defendant's right to obtain or retain a registration do not arise out of the "transaction or occurrence that is the subject matter of the opposing party's claim" (the language in Rule 13(a), FRCP), the answer is that an inter partes proceeding before the Board is *sui generis* and the continued existence or not of the plaintiff's registration is inextricably involved in the determination of the defendant's right to obtain or to maintain a registration when the issue is likelihood of confusion.

The occasion for a counterclaim will typically arise in practice only when an opposer or a cancellation petitioner seeks to prevent or to cancel a registration of an applicant or a respondent on the ground that the defendant's mark is likely to cause confusion or mistake or to deceive within the meaning of section 2(d) of the Trademark Act. Certainly the defense that a registration pleaded by an opposer or cancellation petitioner is invalid and therefore cannot support the pleaded claim of damage is, at the very least, an offshoot of the same basic controversy between the parties and is the essence of an affirmative defense. By virtue of section 2(d), the plaintiff's registration and the defendant's entitlement to a registration are parts of the same transaction, i.e., the process of deciding whether the defendant has a right to obtain or retain a registration.[7]

The same analysis responds to the five comments that the first action and a counterclaim are not intimately related or do not arise out of the same factual situation. A pleaded registration is a substantive part of the evidentiary case on behalf of an opposer or cancellation petitioner who is prosecuting a proceeding based upon likelihood of confusion since, in an opposition, it must be considered regardless of the parties' dates of use and, in a cancellation, is evidence of continuous use since the filing date of the application which issued into the registration. An attack on the validity of the pleaded registration, which must be by means of a counterclaim or petition for cancellation, is thus a related branch of the same basic controversy, and, as such, it is properly a compulsory counterclaim. Furthermore, if the counterclaim or petition for cancellation is presented on allegations of likelihood of confusion and priority of use, as is often the situation, the same factual and legal issues are present in both the opposer's or cancellation petitioner's case and the applicant's or respondent's case; *a fortiori*, a counterclaim is properly compulsory. To argue from a defendant's side that it is involuntarily involved does not justify not having to prosecute a counterclaim if grounds for it exist. A person accused of trademark infringement in an action in a District Court is just as involuntarily involved and it would be anomalous if claim against the plaintiff's registration in such a proceeding were not considered a compulsory counterclaim.

What has been said above answers the comment that there is no judicial economy in a compulsory counterclaim rule. Without such a rule the following

[1] See *Contour Chair-Lounge Co., Inc.* v. *The Englander Co., Inc.*, 139 USPQ 285 (CCPA 1963).

[2] See *King Candy Co.* v. *Eunice King's Kitchen, Inc.*, 182 USPQ 108 (CCPA 1974), where the Court held that the registered mark of even a subsequent-user opposer must be considered in an opposition; cf. *Morehouse Mfg. Corp.* v. *J. Strickland & Co.*, 160 USPQ 715 (CCPA 1969), where, in an analogous situation, the Court said that the Board had taken the proper approach in first determining a cancellation petition by the plaintiff against the defendant's existing registration and then, after dismissing petition for cancellation, dismissed the opposition by the plaintiff against an application by the defendant for the registration of substantially the same mark for the same goods. The Court indicated that the issues in the cancellation had to be decided first because they were controlling.

[3] The public has an interest in the removal from the register of improvidently issued registrations. *Selfway, Inc.* v. *Travelers Petroleum, Inc.* 198 USPQ 271 (CCPA 1978).

[4] See *Martino's* v. *McDonald's System, Inc.*, 27 FR Serv 2d 501 (7th Cir. 1979).

[5] See *National Service Industries, Inc.* v. *Turtle Wax, Inc.*, 154 USPQ 68 (TTAB 1967).

[6] See *Martino's* v. *McDonald's System, Inc., supra*, n. 4; *Plant* v. *Blazer Financial Services Inc. of Georgia*, 27 FR Serv 2d 955 (5th Cir. 1979); *Irrigation & Power Equipment*

Inc. v. *Machinery Specialties Pty., Ltd.* 202 USPQ 12 (D. Colo. 1977); and *Lewis Manufacturing Co., Inc.* v. *Chisholm-Ryder Co., Inc.* 27 FR Serv 2d 1166 (D. Pa. 1979).

[7] See *Webster's New Collegiate Dictionary* (1977) at 1239, which defines "transaction" as "an act, process or instance of transacting."

sequence of events could take place. An opposer could rely on a registration; the applicant could take no testimony, and the opposition would be decided in favor of the opposer. The applicant could then petition for cancellation of the opposer's registration on the ground of prior use. A defense of collateral estoppel raised by the initial opposer on the issue of priority would be met by the applicant with the argument that proof of priority of use in the opposition would have been irrelevant, citing *King Candy Co.* v. *Eunice King's Kitchen, Inc., supra,* n. 2, and therefore was not necessary to the determination of the opposition. A second proceeding would thus be litigated. Assuming applicant prevailed, presumably a second application would be filed. Thus the Office would have had to deal with two contested proceedings and two applications to determine rights that could have been ascertained on the basis of one application and one proceeding. An opposer which thought it had prevailed would discover that it had won a Pyrrhic—even a phantom—victory, and the register would have incorrectly reflected the rights of the parties, to the detriment of the public, for an extended period of time. To contend, in these circumstances, that the rule would not result in judicial, examining and public economy is to miss the point entirely.

Several comments stated that even under amended §§ 2.106 (b) and 2.114(b), the Board cannot settle all of the potential issues between the parties because matters of infringement and unfair competition are for the courts to decide. It should be pointed out that the rules being adopted are designed to settle in one proceeding all of the issues determinable within the Patent and Trademark Office, arising from a particularized controversy involving specified marks and goods or services, which are ripe for litigation and adjudication. Obviously, issues outside the jurisdiction of the Board cannot be determined.

Amended §§ 2.106(b) and 2.114(b) do not impose a new and untried practice on the Trademark Trial and Appeal Board. On the contrary, a compulsory counterclaim rule was in effect and worked well from the date of the decision in *Outdoor Sports Industries, Inc.* v. *The Joseph & Feiss Co.*, 177 USPQ 535 (TTAB 1973), *petition denied*, 177 USPQ 533 (Comm'r. Pats 1973) to the date of the decision in *Endo Laboratories, Inc.* v. *Fredericks*, 197 USPQ 560 (TTAB 1977).[8] No objection to the practice from any source came to the Board's attention and no appeal from a decision applying the practice was prosecuted to an appellate decision except for *Thuron Industries, Inc.* v. *The Conrad-Pyle Co.*, 198 USPQ 403 (CCPA 1978), where the Court held that Rule 13(a), FRCP, did not support the Board's practice and that § 2.106(b), as then written, was a permissive rather than a mandatory rule. Nevertheless, during the five-year period in which a compulsory counterclaim practice was in effect, the Board did not experience any undue difficulty in discovery or motion practice, did not observe any unusual increase in the number of counterclaims that were filed and did not find that proceedings were made longer or more complicated by reason of the counterclaim practice. On the contrary, the Board's experience showed that the compulsory counterclaim practice resulted in a net saving of time and resources, thereby enabling the Board to function more efficiently and to serve the public interest more effectively.

Several comments stated that the compulsory counterclaim rules will provoke unnecessary conflicts or will make settlements more difficult to achieve. It is considered very unlikely that provisions for compulsory counterclaims will stimulate needless conflicts (by definition, a conflict exists before a counterclaim would be filed) or hamper attempts to reach a settlement. When parties have conflicting claims against each other, it is believed that both would have reason to explore the possibility of an amicable settlement which would obviate the need for litigation. However, in response to a suggestion received, it is considered inadvisable to quote or refer to the compulsory counterclaim rules in the Office letter notifying an applicant of an opposition or a respondent of a cancellation proceeding because that might be misinterpreted as a direction to file a counterclaim in every proceeding.

A few comments questioned the effect of amended §§ 2.106(b) and 2.114(b) on subsequent court litigation between the parties. These sections apply only to proceedings before the Trademark Trial and Appeal Board; they do not and could not affect the powers over registrations conferred upon the Federal Courts by section 37 of the Trademark Act. The Patent and Trademark Office cannot, of course, speculate on how courts may apply the doctrine of estoppel to claims which might have been, but were not, litigated in the Office. This and other questions remain to be answered by the evolution of case law after the amended rules become effective.

It is expected that in the original notice of opposition or petition for cancellation, an opposer or cancellation petitioner will identify by number and date of issuance each registration upon which it expects to rely. The deliberate withholding, until the testimony period of an opposer or cancellation petitioner, of the identification of the registration or registrations intended to be introduced in evidence in support of the claim of damage causes unwarranted surprise and prejudice to an applicant or respondent. Such a practice frustrates proper discovery and preparation for trial. The burden is upon an opposer or cancellation petitioner to present initially a pleading that gives fair notice of the case that an applicant or respondent must meet. The Federal Rules of Civil Procedure reject the approach that pleading is a game of skill.[9]

The Patent and Trademark Office recognizes that situations will arise where an opposer or cancellation petitioner will want to introduce a registration which was not originally pleaded. This may be done by a motion to amend the pleadings under Rule 15, FRCP, to add one or more registrations. When they are pleaded by number and date of issuance, amended §§ 2.106(b) and 2.114(b) will then apply to any added registration. It should be remembered that a long and unexplained delay in the filing of a motion to amend a notice of opposition or petition for cancellation, when there is no question of newly discovered evidence (as there would not be when a party is pleading its own registration), may render the amendment untimely if the defendant is thereby prejudiced.[10] It therefore behooves an opposer or cancellation petitioner to plead its registration by number and date of issuance, if not in the original notice of opposition or petition for cancellation, as soon as possible after the omission (or newly issued registration) comes to the opposer's or cancellation petitioner's attention. Amended §§ 2.106(b)(2)(iv) and 2.114(b)(2)(iv) provide sufficient flexibility to allow an applicant or respondent fair and adequate opportunity to plead, take discovery, and present evidence on a counterclaim on any available ground when an opposer or cancellation petitioner pleads a registration in an amended notice of opposition or petition for cancellation.

An opposer or cancellation petitioner may withdraw without prejudice a notice of opposition or a petition for cancellation before an answer is filed. See §§ 2.106(c) and 2.114(c). One comment inquired what would happen if the defendant failed to file an answer. When an applicant or respondent elects not to answer, the opposition or cancellation is decided as in a case of default. See §§ 2.106(a) and 2.114(a). If no answer of any kind is filed, there can be no counterclaim, which is, by definition, a pleading within an answer. If a party is willing to lose by default, there is a very high probability that there is no interest in the mark, at least for the goods or services identified in the application being opposed or in the registration sought to be cancelled.

One comment expressed concern that the premature destruction of the records of proceedings in the Patent and

[8] During this period, the following cases applied the compulsory counterclaim rule then in effect: *Textron, Inc.* v. *The Gillette Co.*, 180 USPQ 152 (TTAB 1973); *Kafita* v. *Walter Kidde & Co.*, 185 USPQ 436 (TTAB 1975); *Delta Tire Corp.* v. *Sports Car Club of America, Inc.*, 185 USPQ 443 (TTAB 1975); and *Scovill Mfg. Co.* v. *Stocko Metallwarenfabriken Henkels und Sohn KG*, 188 USPQ 24 (TTAB 1975).

[9] See *Tiffany & Co.* v. *Columbia Industries, Inc.*, 173 USPQ 6 (CCPA 1972).

[10] See *Ercona Corp.* v. *JENAer Glaswerk Schott & Gen.*, 182 USPQ 573 (TTAB 1974).

Trademark Office might impede or prevent a party from rebutting a contention that a compulsory counterclaim was not filed. There should be no apprehension that the destruction or loss of Office records would interfere with a just application of amended §§ 2.106(b) and 2.114(b). Every paper in every proceeding is either filed by or served upon every party. See §§ 2.105, 2.113 and 2.119(a). In every case, the decision or an order terminating the proceeding is served on every party through counsel or directly when there is no counsel. Thus, every party to a proceeding will have a complete record of the pleadings and the decision or order terminating a proceeding for future use as needed.

Several comments raised the question of the effect of amended §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) in situations where the grounds for a counterclaim exist but are not known to a defendant. Several related comments indicated a lack of understanding of the difference between the existence of grounds for a counterclaim and knowledge of those grounds by a defendant. One comment stated that the author agreed with the proposed rules if they were limited to grounds the defendant knew or had reason to know, and one comment stated that the proposed rules should limit compulsory counterclaims to certain causes of action, e.g., likelihood of confusion combined with priority of use. Another comment was in favor of the adoption of the proposed rules provided that a counterclaim could be pleaded in an amended answer.

A distinction is made in amended §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) between the time when a cause of action giving rise to a counterclaim must have matured for a counterclaim to be compulsory and the time when the counterclaim be pleaded. The cause of action must have matured by the date of filing of the answer to the notice of opposition or petition for cancellation in order for the counterclaim to be compulsory in that proceeding. Rule 13(a), FRCP, provides that "A pleading shall state as a counterclaim any claim which *at the time of serving the pleading* the pleader has against any opposing party * * *" (emphasis added). This indicates that there should be a date which sets a limit so that if a claim matures thereafter it is not a compulsory counterclaim. The date of filing of the answer seems to be, in the context of proceedings before the Board, a fair limiting date. Thus, if a cause of action, such as abandonment,[1] does not exist until after the date of the answer, it is not a compulsory counterclaim. That is, if the cause of action for the cancellation of the plaintiff's pleaded registration has not matured by the date of filing of the answer, the filing of a counterclaim is permissive rather than mandatory.

It is recognized that the grounds for a counterclaim may remain unknown until after the initial answer is filed. In certain situations the defendant will usually know the grounds, or at least have knowledge upon which a counterclaim could be pleaded in good faith on information and belief, before the answer is filed. These grounds include likelihood of confusion combined with priority of use, or mere descriptiveness of the plaintiff's alleged mark, or that the plaintiff's alleged mark is the common descriptive name of a product or service. In other situations, the grounds for a counterclaim may be learned by means of discovery or, in some instances, as a result of an opposer's or cancellation petitioner's evidence. Examples of such grounds are abandonment and, rarely, fraud. In the absence of a separate petition for cancellation previously filed by a party or anyone in privity therewith, the counterclaim must be filed as part of the answer (which means that the answer must be verified and the proper cancellation fee paid) if the grounds are known when the answer is filed. If grounds for cancellation are learned after the answer is filed, the counterclaim must be filed promptly (which is a flexible standard) after the grounds are learned if it is to be asserted. The counterclaim which is added by an amendment to the answer must be verified and accompanied by the proper fee. As amended §§ 2.106(b)(2)(i) and 2.114(b)(2)(i) make clear, any answer may be seasonably amended to plead a counterclaim when the grounds are learned after the original answer is filed.

A number of comments expressed concern that the rules will mandate or encourage speculative counterclaims which the defendant would hope to support by information learned through discovery. A related comment was that proceedings would become complicated and there would be no saving in time or expense. Several comments indicated that an applicant desiring a decision only on the single issue of the registrability of its mark would feel compelled to file a counterclaim.

An applicant or respondent is under an obligation to learn by discovery whether suspected possible grounds for a counterclaim in fact exist if it wants to be sure of the opportunity to file a counterclaim when the grounds existed as of the date of filing the answer. The amount of discovery required to learn of the possible existence of grounds for a counterclaim is not onerous, at least up to the point where an informed decision may be made whether or not to pursue the issue. However, speculative counterclaims should not be filed. Section 2.15 states that the signature of an attorney at law or other person representing a party to a proceeding to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information and belief there is good ground to support it; and that it is not interposed for delay. Rule 11, FRCP, contains language to the same effect and further provides that a pleading signed with intent to defeat the purpose of the rule may be stricken as sham and false.

An applicant or respondent is never under an absolute obligation to plead a counterclaim. If an applicant or respondent desires to have a proceeding which will determine only whether the applicant's or respondent's mark is likely to cause confusion, mistake or deception, the applicant or respondent may refrain from filing a counterclaim (assuming, of course, that there is a choice because the factual basis for a counterclaim is present). The effect of omitting a counterclaim for which the grounds exist will be that the applicant or respondent, after the case is terminated will thereafter be barred from petitioning to cancel the registration pleaderd by the opposer or cancellation petitioner (i.e., the registration identified by number and date of issue in an original notice of opposition or petition for cancellation) on any ground that had matured when the original answer was filed in the first proceedings. This bar will be effective, however, only insofar as a second proceeding between the parties would involve the same mark and the same goods or services of the party (applicant or respondent in the first proceedings) as were the subject of the first proceeding.

[1] See *P.A.B. Produits et Appareils de Beaute v. Ratinine Societa In Nome Collett'vo di S.A. e.M. Uselline*, 196 USPQ 861 (CCPA 1978).

Several comments raised the question of the effect of amended §§ 2.106(b) and 2.114(b) when there was no reason for the applicant or respondent to file a counterclaim in the first proceeding because there clearly was no likelihood of confusion, but a later application or registration by the same applicant or respondent, for a specifically different mark or for the same mark but different goods or services, presented a much closer question, and the applicant or respondent, when again met with an opposition or petition for cancellation by the same party relying upon the same registration as had been pleaded in the prior proceeding, would want to counterclaim for cancellation. As indicated previously, the rules that are being adopted have the objective of avoiding a relitigation of issues that could have been determined in a single proceeding. The intent of amended §§ 2.106(b) and 2.114(b) is to bar a later petition for cancellation of the pleaded registration only when the same conflict or controversy is sought to be relitigated. Thus, if a second proceeding concerns a mark or a description of goods or services different from those of the applicant or respondent in the first proceeding, other than trivial, frivolous or immaterial changes, different issues are presented, the controversy is different, and the compulsory counterclaim rules would have no application; in this situation a petition or counterclaim for cancellation of the opposer's or cancellation petitioner's pleaded registration in a new proceeding would not be barred

The situations where the compulsory counterclaim rules in amended §§ 2.106(b) and 2.114(b) are most likely to be invoked are those in which a cause of action for the cancellation of an opposer's or cancellation petitioner's registration arises from events or facts which have been concluded or fixed at a time which has passed. When a cause of action arises from a continuing state of facts, e.g., abandonment as a result of nonuse of a mark, or licensing without adequate control, or because a word has become a common descriptive name, it is conceivable that the compulsory counterclaim rules

that are being adopted will be applicable very infrequently or not at all.

One comment stated that an applicant or respondent cannot properly plead damage from an opposer's or cancellation petitioner's registration until the Trademark Trial and Appeal Board or a court "reverses" the examiner's "holding" that a mark, as applied to its goods or services, does not so resemble a previously registered mark as to be likely to cause confusion. This comment misconstrued the decision in *Hyde Park Footwear Co., Inc.* v. *Hampshire Designers, Inc.*, 197 USPQ 629 (TTAB 1977). An applicant or respondent may consider itself to be damaged by the registration of an opposer's or cancellation petitioner's mark, and is therefore entitled to present evidence and to be heard, notwithstanding that the examiner, with only an application and a prior registration to consider, may have been of the opinion that confusion is unlikely. There is no requirement, and it would be unreasonable to impose one, that an applicant or respondent must await an unfavorable decision of the Board in an opposition or cancellation proceeding (thereby "reversing" the examiner) before the applicant or respondent could assert a likelihood of confusion as a basis for the standing necessary for a cancellation petition against an opposer's or petitioner's registration. Where a party can demonstrate a real interest in the proceeding, is has standing to petition for cancellation.[12]

Another comment suggested that the fee payable in connection with a cancellation be $25 regardless of the number of registrations sought to be cancelled by the counterclaimant. Section 31(a)(5) of the Trademark Act requires a fee of $25 on filing a petition for cancellation for each class. Since section 41 of the Trademark Act specifies that the rules and regulations promulgated by the Commissioner be not inconsistent with law, a single fee of $25 irrespective of the number of registrations or classes for which cancellation is sought cannot be established. However, as a practical matter, the fee for cancellation is usually a very small percentage of the total cost incurred. Even in the extremely rare case involving numerous pleaded registrations, the antagonists are generally prepared to expend a considerable sum to settle a wide-ranging dispute, and again the fee is a small percentage of the total expense. Thus, the statutory fee is not considered to be a reason not to adopt the compulsory counterclaim rules.

Amended §§ 2.106(b) and 2.114(b) are not applicable to concurrent use proceedings. In such proceedings, the applicant is the nominal plaintiff and only its concurrent use application is involved, so there is no registration against which the named excepted user (the nominal defendant in the proceeding) could counterclaim.

One comment suggested a rule change which was more extensive than the published proposal. After careful consideration, it was decided not to make the rules that are being adopted applicable to concurrent use proceedings or to interference proceedings. When a concurrent use applicant specifies another's application or registration as an exception to the applicant's right of exclusive use, the other party's application or registration is made a part of the concurrent use proceeding and the excepted applicant or registrant is made a party to the proceeding. See §§ 2.42 and 2.99. At the conclusion of the proceeding conducted by the Trademark Trial and Appeal Board pursuant to section 17 of the Trademark Act, the Commissioner may restrict the registration of a registered mark and may register the mark or marks for the person or persons entitled thereto, as the rights of the parties are established in the proceeding. See section 18 of the Trademark Act. Prior to the institution of a concurrent use proceeding, which is between or among the concurrent use applicant or applicants and persons named as excepted users, which include applicants and registrants specified as excepted users, a concurrent use application is published for opposition under section 12(a) of the Trademark Act. Upon publication under section 12(a), any person, including a person named in the application as an excepted user, who believes he may be damaged may file a notice of opposition.

If the opposition to a concurrent use application is prosecuted to a decision, the rights of the parties, including any rights determinable on a counterclaim under amended § 2.106 (b), may be decided there. If the rights of the parties are determined in the concurrent use proceeding, section 18 of the Trademark Act authorizes the Commissioner to restrict an applicant's or an excepted user's application or registration in accordance with the findings and conclusions of the Board. Hence, there is no need to extend the compulsory counterclaim rules to concurrent use proceedings.

[12] See *Federated Foods, Inc.* v. *Fort Howard Paper Co.*, 192 USPQ 24 (CCPA 1976); and *Golomb* v. *Wadsworth*, 201, USPQ 700 (CCPA 1979).

Interferences are declared only by the Commissioner and only upon petition showing extraordinary circumstances which would result in a party's being unduly prejudiced without an interference. See § 2.91(a). In practice, an interference is declared only when there are more than two pending applications for substantially the same mark for substantially the same goods or services and the applicant claiming the earliest date of first use is the junior applicant so that he would have to file and prosecute two or more oppositions successfully before his mark could be published for opposition. Since only applications are involved, there is no need for a compulsory counterclaim rule in interference proceedings. All of the rights of the parties will be determined in the interference proceeding.

TEXT OF RULES ADOPTED

After consideration of the comments received and pursuant to the authority contained in section 1123 of Title 15 of the United States Code and section 6 of Title 35 of the United States Code, Part 2 of Title 37 of the Code of Federal Regulations is amended as set forth below.

1. In § 2.106 paragraph (b) is revised to read as follows:

§ 2.106 *Answer*

* * * * *

(b)(1) An answer may contain any defense, including the affirmative defenses of unclean hands, laches, estoppel, acquiescence, fraud, mistake, or prior judgment. When pleading special matters, the Federal Rules of Civil Procedures shall be followed. A reply to an affirmative defense need not be filed. When a defense attacks the validity of a registration pleaded in the opposition, paragraph (b)(2) of this section shall govern. A pleaded registration is a registration identified by number and date of issuance in an original notice of opposition or in any amendment thereto made under Rule 15, FRCP.

(2)(i) A defense attacking the validity of any one or more of the registrations pleaded in the opposition shall be a compulsory counterclaim if grounds for such counterclaim exists at the time when the answer is filed. If grounds for a counterclaim are known to the applicant when the answer to the opposition is filed, the counterclaim shall, be pleaded with or as part of the answer. If grounds for a counterclaim are learned during the course of the opposition proceeding, the counterclaim shall be pleaded promptly after the grounds therefor are learned. A counterclaim need not be filed if it is the subject of another proceeding between the same parties or anyone in privity therewith.

(ii) An attack on the validity of a registration pleaded by an opposer will not be heard unless a counterclaim or separate petition is filed to seek the cancellation of such registration.

(iii) The provisions of §§ 2.111 through 2.115, inclusive, shall be applicable to counterclaims. A time, not less than thirty days, will be designated within which an answer to the counterclaim must be filed.

(iv) The times for pleading discovery, testimony, briefs or oral argument will be reset or extended when necessary, upon motion by a party, to enable a party fully to present or meet a counterclaim or separate petition for cancellation of a registration.

2. In § 2.114 paragraph (b) is revised to read as follows:

§ 2.114 *Answer*

* * * * *

(b)(1) An answer may contain any defense, including the affirmative defenses of unclean hands, laches, estoppel, acquiescence, fraud, mistake, or prior judgment. When pleading special matters, the Federal Rules of Civil Procedure shall be followed. A reply to an affirmative defense need not be filed. When a defense attacks the validity of a registration pleaded in the petition, paragraph (b)(2) of this section shall govern. A pleaded registration is a registration identified by number

and date of issuance in an original petition for cancellation or in any amendment thereto made under Rule 15, FRCP.

(2)(i) A defense attacking the validity of any one or more of the registrations pleaded in the petition shall be a compulsory counterclaim if grounds for such counterclaim exist at the time when the answer is filed. If grounds for a counterclaim are known to respondent when the answer to the petition is filed, the counterclaim shall be pleaded with or as a part of the answer. If grounds for a counterclaim are learned during the course of the cancellation proceeding. The counterclaim shall be pleaded promptly after the grounds therefor are learned. A counterclaim need not be filed if it is the subject of another proceeding between the same parties or anyone in privity therewith.

(ii) An attack on the validity of a registration pleaded by a petitioner for cancellation will not be heard unless a counterclaim or separate petition if filed to seek the cancellation of such registration.

(iii) The provisions of §§ 2.111 through 2.115, inclusive, shall be applicable to counterclaims. A time, not less than thirty days, will be designated within which an answer to the counterclaim must be filed.

(iv) The times for pleading, discovery, testimony, briefs, or oral argument will be reset or extended when necessary, upon motion by a party, to enable a party fully to present or meet a counterclaim or separate petition for cancellation of a registration.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dec. 8, 1980.

Approved: Jan. 9, 1981.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 81-1576 Filed 1-21-81; 8:45 am]

The text of the foregoing amended rules is repeated below but with deletions from the prior text shown within brackets and additions indicated by arrows:

1. In § 2.106 paragraph (b) is revised to read as follows:

§ 2.106 *Answer*

* * * * *

(b) ►(1)◄ An answer may contain any defense, [and it may also contain a request for affirmative relief by way of cancellation of a registration pleaded in the opposition; but no defense attacking the validity of such registration may be otherwise raised in the proceeding. Such request for affirmative relief must be verified or include a declaration in accordance with § 2.20 and must be accompanied by the fee as required by section 14 of the act. A reply to such request for affirmative relief is required within twenty days after service thereof; but no other reply to the answer need be filed.] ►including the affirmative defenses of unclean hands, laches, estoppel, acquiescence, fraud, mistake, or prior judgment. When pleading special matters, the Federal Rules of Civil Procedures shall be followed. A reply to an affirmative defense need not be filed. When a defense attacks the validity of a registration pleaded in the opposition, paragraph (b)(2) of this section shall govern. A pleaded registration is a registration identified by number and date of issuance in an original notice of opposition or in any amendment thereto made under Rule 15, FRCP.

(b)(2)(i) A defense attacking the validity of any one or more of the registrations pleaded in the opposition shall be a compulsory counterclaim if grounds for such counterclaim exist at the time when the answer is filed. If grounds for a counterclaim are known to the applicant when the answer to the opposition is filed, the counterclaim shall be pleaded with or as part of the answer. If grounds for a counterclaim are learned during the course of the opposition proceeding, the counterclaim shall be pleaded promptly after the grounds therefor are learned. A counterclaim need not be filed if it is the subject of another proceeding between the same parties or anyone in privity therewith.

(ii) An attack on the validity of a registration pleaded by an opposer will not be heard unless a counterclaim or separate petition is filed to seek the cancellation of such registration.

(iii) The provisions of §§ 2.111 through 2.115, inclusive, shall be applicable to counterclaims. A time, not less than thirty days, will be designated within which an answer to the counterclaim must be filed.

(iv) The times for pleading, discovery, testimony, briefs or oral argument will be reset or extended when necessary, upon motion by a party, to enable a party fully to present or meet a counterclaim or separate petition for cancellation of a registration.◄

2. In § 2.114 paragraph (b) is revised to read as follows:

§ 2.114 *Answer*

* * * * *

(b)►(1)◄ An answer may contain any defense, [and it may also contain a request for affirmative relief by way of cancellation of a registration pleaded in the petition; but no defense attacking the validity of such registration may be otherwise raised in the proceeding. Such request for affirmative relief must be verified, or include a declaration in accordance with § 2.20, and must be accompanied by the fee as required by section 14 of the act. A reply to such request for affirmative relief is required within twenty days after service thereof, but no other reply to the answer need be filed.] ►including the affirmative defenses of unclean hands, laches, estoppel, acquiescence, fraud, mistake, or prior judgment. When pleading special matters, the Federal Rules of Civil Procedure shall be followed. A reply to an affirmative defense need not be filed. When a defense attacks the validity of a registration pleaded in the petition, paragraph (b)(2) of this section shall govern. A pleaded registration is a registration identified by number and date of issuance in an original petition for cancellation or in any amendment thereto made under Rule 15, FRCP.

(b)(2)(i) A defense attacking the validity of any one or more of the registrations pleaded in the petition shall be a compulsory counterclaim if grounds for such counterclaim exist at the time when the answer is filed. If grounds for a counterclaim are known to respondent when the answer to the petition is filed, the counterclaim shall be pleaded with or as part of the answer. If grounds for a counterclaim are learned during the course of the cancellation proceeding, the counterclaim shall be pleaded promptly after the grounds therefor are learned. A counterclaim need not be filed if it is the subject of another proceeding between the same parties or anyone in privity therewith.

(ii) An attack on the validity of a registration pleaded by a petitioner for cancellation will not be heard unless a counterclaim or separate petition is filed to seek the cancellation of such registration.

(iii) The provisions of §§ 2.111 through 2.115, inclusive, shall be applicable to counterclaims. A time, not less than thirty days, will be designated within which an answer to the counterclaim must be filed.

(iv) The times for pleading, discovery, testimony, briefs, or oral argument will be reset or extended when necessary, upon motion by a party, to enable a party fully to present or meet a counterclaim or separate petition for cancellation of a registration.◄

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

Feb. 3, 1981.

Errata

In the listing of "Reissue Applications Filed," which appears in the OFFICIAL GAZETTE of July 1, 1980, at 996 OG 2 and 996 TMOG 3, the patent number identifying one of the reissue applications is incorrectly shown as "3,739,944." The complete entry including the correct patent number appears below:

3,739,994, Re. S.N. 129,394, filed Mar. 11, 1980, Cl. 241/74, APPARATUS FOR PRODUCING DEBONED MEAT PRODUCTS, Archie Rae McFarland, owner of Record: Beehive Machinery Inc., Salt Lake City, Utah, Attorney or Agent: Philip A. Mallinckrodt et al., Ex. Gp. 322.

In the listing of "Reissue Applications Filed," which appears in the OFFICIAL GAZETTE of Nov. 25, 1980, 1000 OG 13[illegible] and 1000 TMOG 19, the patent number identifying one of the reissue applications is incorrectly shown as

"4,014,633." The complete entry including the correct patent number appears below:

3,792,133, Re. S.N. 183,327, filed Sept. 2, 1980, Cl. 264/33, METHOD FOR SLIP FORMING WALLS OF ASYMMETRICAL TRANSVERSE CROSS SECTION, Roy R. Goughnour, owner of Record: A. C. Aukerman Co., Jackson, Mich., Attorney or Agent: Beaman and Beaman, Ex. Gp. 147.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,742,475, Re. S.N. 206,727, Filed Nov. 14, 1980, Cl. 340/632, GASEOUS IMPURITY DETECTOR EMPLOYING CORONA DISCHARGE PHENOMENON, Leonard N. Liebermann, et al., Owner of Record: *Tif Instruments, Inc., Miami, Fla.,* Attorney or Agent: Willis H. Taylor, Jr., et al., Ex. Gp.: 234

4,016,403, Re. S.N. 026,465, Filed Apr. 2, 1979, Cl. 219/550, ELECTRICAL HEATING ELEMENT, Lorne A. Best, Owner of Record: *National Element Inc., Troy, Mich.,* Attorney or Agent: Charles R. Rutherford, et al., Ex. Gp.: 213

4,089,030, Re. S.N. 005,561, Filed Jan. 22, 1979, Cl. 360/137, HELICAL SCAN VTR TAPE DECK ASSEMBLY WITH SEPARATE SCANNING ASSEMBLY, Heinrich Zahn, Owner of Record: *Robert Bosch GmbH, Darmstadt, Germany,* Attorney or Agent: Ernest F. Marmorek, Ex. Gp.: 235

4,118,384, Re. S.N. 193,337, Filed Oct. 2, 1980, Cl. 260/163, PROCESS FOR PREPARATION OF AZO DYESTUFFS BY COUPLING IN PRESENCE OF AROMATIC SULPHONIC ACID-FORMALDEHYDE REACTION PRODUCT, Hans-Heinz Molls, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 117

4,131,905, Re. S.N. 196,102, Filed Oct. 10, 1980, Cl. 357/30, LIGHT-TRIGGERED THYRISTOR AND PACKAGE THEREFORE, Maurice H. Hanes, et al., Owner of Record: *Electric Power Research Institute, Inc., Palo Alto, Calif.,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 254

4,135,424, Re. S.N. 197,615, Filed Oct. 16, 1980, Cl. 84/1.13, VARIABLE FUNCTION GENERATOR, Shimaji Okamoto, Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan,* Attorney or Agent: James R. Longacre, Ex. Gp.: 217

Board of Appeals Decisions Rendered in the Month of January 1981

Affirmed	176
Affirmed in part	24
Reversed	65
Total	265

Flow Diagrams of Proposed Procedures for Reexamination and Inter Partes Protest Proceedings

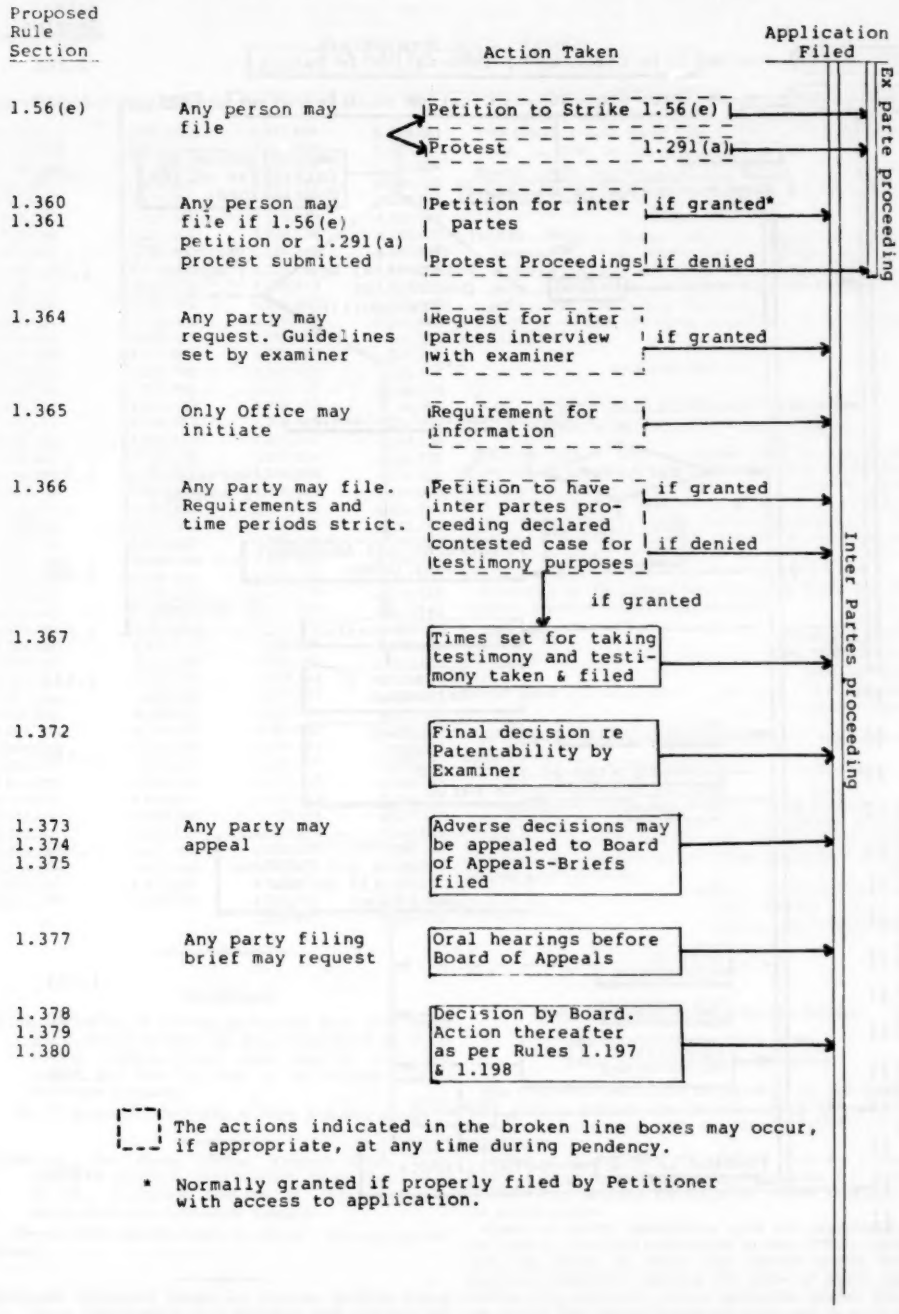
The purpose of this notice is to provide interested persons with a broad overview of the provisions of the proposed rule changes relating to reexamination and inter partes protest proceedings. The flow diagrams below serve to summarize the general provisions of the proposed changes which were published in the *Federal Register* on Jan. 13, 1981 (46 Fed. Reg. 3162–3175), and in the OFFICIAL GAZETTE on Feb. 17, 1981 (1003 O.G. 36). Public Law 96–517, providing the statutory authority for reexamination of patents, was published in the OFFICIAL GAZETTE on Feb. 3, 1981 (1003 O.G. 7–21).

Interested persons are reminded that comments must be submitted on or before Apr. 16, 1981; public hearing, Apr. 16, 1981, 9:30 a.m. Requests to present oral testimony should be received on or before Apr. 9, 1981. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and requests to present oral testimony should be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

Feb. 11, 1981.

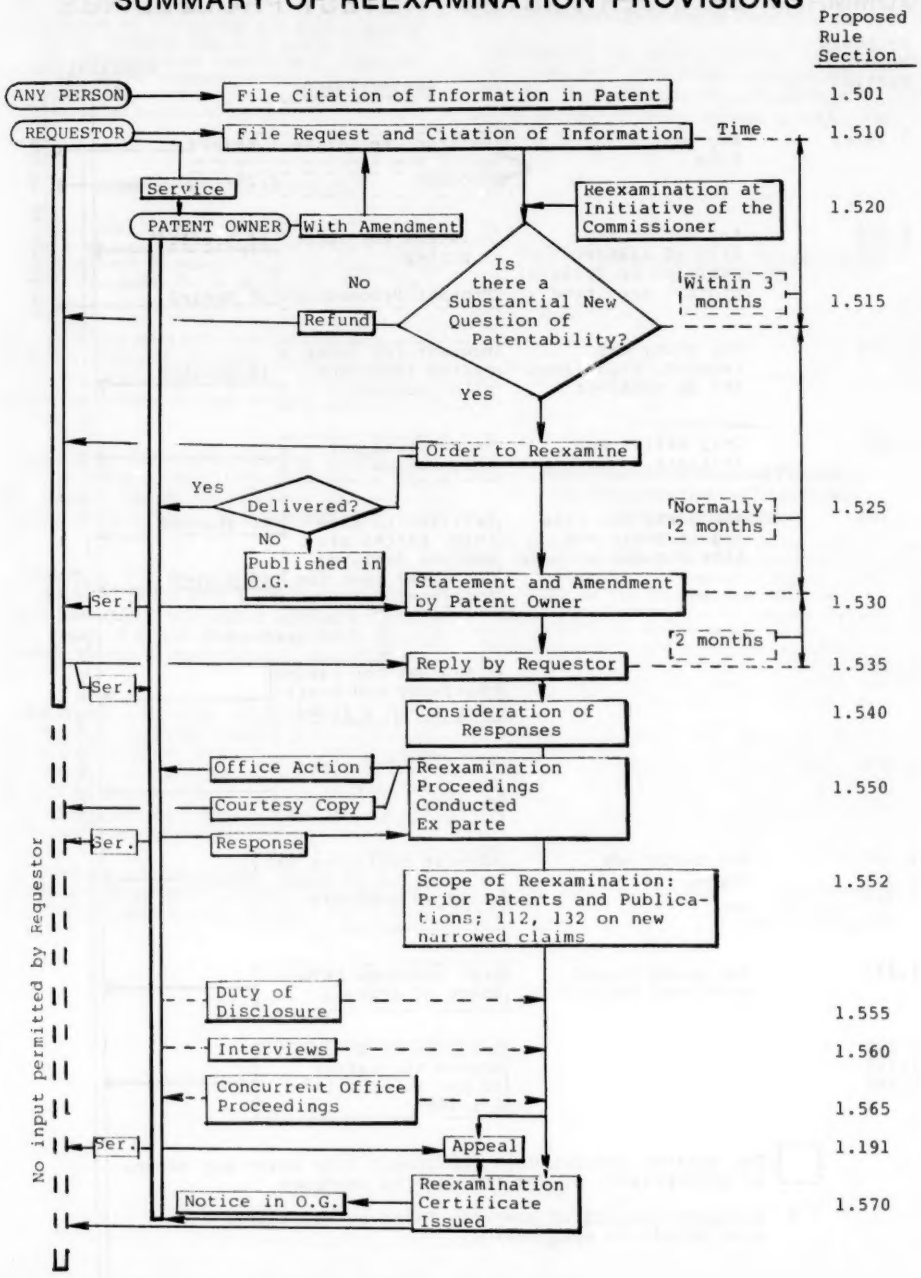
SUMMARY OF INTER PARTES PROTEST PROCEEDINGS



The actions indicated in the broken line boxes may occur, if appropriate, at any time during pendency.

* Normally granted if properly filed by Petitioner with access to application.

SUMMARY OF REEXAMINATION PROVISIONS



PATENT NOTICES

Certificates of Correction for the Week of Mar. 3, 1981

Re. 30,235	4,215,353	4,227,629	4,233,051
D. 249,873	4,215,409	4,227,920	4,233,168
D. 257,169	4,215,935	4,228,108	4,233,207
3,437,415	4,216,908	4,228,144	4,233,395
3,719,670	4,217,337	4,228,366	4,233,399
3,786,314	4,217,338	4,228,512	4,233,443
4,008,708	4,218,364	4,228,528	4,233,476
4,011,209	4,218,440	4,228,565	4,233,552
4,046,577	4,219,430	4,228,798	4,233,589
4,078,375	4,219,633	4,229,073	4,233,622
4,079,496	4,220,341	4,229,243	4,233,796
4,095,026	4,220,882	4,229,488	4,233,926
4,098,888	4,221,036	4,229,555	4,233,988
4,100,240	4,221,605	4,229,687	4,234,011
4,106,029	4,221,708	4,230,005	4,234,170
4,106,765	4,221,941	4,230,147	4,234,206
4,128,229	4,222,149	4,230,363	4,234,505
4,141,463	4,222,665	4,230,445	4,234,722
4,159,866	4,222,682	4,230,492	4,234,731
4,160,666	4,222,786	4,230,514	4,234,751
4,166,718	4,222,827	4,230,528	4,234,777
4,183,846	4,222,894	4,230,546	4,234,983
4,183,948	4,223,337	4,230,638	4,234,998
4,185,992	4,223,351	4,230,716	4,235,002
4,187,748	4,223,607	4,230,840	4,235,043
4,188,730	4,223,784	4,230,929	4,235,071
4,190,933	4,224,018	4,230,976	4,235,081
4,190,967	4,224,240	4,231,198	4,235,735
4,193,650	4,224,289	4,231,218	4,235,741
4,198,937	4,224,669	4,231,468	4,236,032
4,201,348	4,224,830	4,231,560	4,236,092
4,203,064	4,224,846	4,231,582	4,236,278
4,206,743	4,224,976	4,231,744	4,236,355
4,207,823	4,225,395	4,231,747	4,236,492
4,209,401	4,225,407	4,231,761	4,236,500
4,209,805	4,225,697	4,231,769	4,236,529
4,209,843	4,226,062	4,231,791	4,236,554
4,210,473	4,226,306	4,231,836	4,236,648
4,210,753	4,226,488	4,232,216	4,236,668
4,210,806	4,226,577	4,232,253	4,236,778
4,211,652	4,226,638	4,232,301	4,237,118
4,211,864	4,226,717	4,232,317	4,237,675
4,212,343	4,227,025	4,232,365	4,238,277
4,214,088	4,227,246	4,232,425	4,238,494
4,214,607	4,227,427	4,232,606	4,239,108
4,215,339	4,227,536	4,232,614	4,239,436
		4,232,991	4,240,143

Disclaimers

3,275,390.—*Bobby G. Franks*, Bartlesville, Okla. RETAINER RING AND WASHER FOR TRACTOR-TRAILER WITH FIFTH WHEEL. Patent dated Sept. 27, 1966. Disclaimer filed Dec. 12, 1980, by the assignee, *Phillips Petroleum Company*.

Hereby enters this disclaimer to claim 1 of said patent.

3,608,210.—*Paul Henry O'Shea*, Newport Beach, Calif. TRAFFIC HAZARD SIMULATOR. Patent dated Sept. 28, 1971. Disclaimer filed Oct. 30, 1980, by the assignee, *California Automotive Research*.

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,911,483.—*Nobutoshi Kihara* and *Yukihiko Machida*, Tokyo, Japan. APPARATUS AND METHOD FOR RECORDING AND REPRODUCING A VIDEO SIGNAL IN SUCCESSIVE RECORD TRACKS ON A RECORD SHEET WITHOUT GUARD BANDS BETWEEN ADJACENT TRACKS. Patent dated Oct. 7, 1975. Disclaimer filed Jan. 15, 1981, by the assignee, *Sony Corporation*.

Hereby enters this disclaimer to claims 1, 6, 7, 8, 9, 10, 13, 18, 20, 21, 23, 26, 30, 31, 33, 34, 35 and 39 of said patent.

4,183,673.—*Wiley L. Easley*, Lancaster; *Richard J. Hoeske*, Leominister; and *Silvio Petrucci*, Fitchburg, Mass. MARBLEIZATION OF PLASTIC MATERIALS. Patent dated Jan. 15, 1980. Disclaimer filed Dec. 11, 1980, by the assignee, *The Gillette Company*.

Hereby enters this disclaimer to claims 1, 2, 8, 9 and 10 of said patent.

Availability of Patent and Trademark Office Notices on a Subscription Basis

Effective Mar. 3, 1981, a separate publication of a part of the OFFICIAL GAZETTE to be entitled *Patent and Trademark Office Notices*, will be made available on a subscription basis. This weekly periodical will contain all notices which appear in the Patent OFFICIAL GAZETTE and the Trademark OFFICIAL GAZETTE. Additionally, current information regarding the general date status of trademark and patent applications will be provided.

Depending on the postage rate that is preferred, the subscription price for this service is as follows:

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RENE D. TEGTMEYER,
Acting Commissioner of Patents and Trademarks.

Feb. 10, 1981.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will

usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division, Room 2D 444 Pentagon, Washington, D.C. 20310

Patent application 906,186. Prestressed Article. Filed May 15, 1978.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administrative Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–171,625. Log Handling Machine. Filed July 23, 1980.

Patent application 6–171,626. Dyeing of Cellulose-Containing Textiles in Glycol and Glycol Ester Solvents. Filed July 23, 1980.

Patent application 6–171,627. Method of Preparing Citrus Fruit Sections With Fresh Fruit Flavor and Appearance. Filed July 23, 1980.

Patent 4,219,469. Extraction of Cottonseed and Concentrates To Improve the Color of Protein Isolate. Filed Sept. 19, 1978. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,224,030. Durable Press Finishing Treatment for Cellulose Textiles Employing an Aluminum Acetate Catalyst Solution. Filed Jan. 5, 1979. Patented Sept. 23, 1980. Not available NTIS.

Patent 4,228,196. Process for Preparing Precooked Potato Products. Filed Oct. 2, 1979. Patented Oct. 14, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/Patent Counsel for the Navy Office of Naval Research, Code 302, Arlington, Va. 22217

Patent application 6–011,821. Method for Determining the Compensation Density in N-Type Narrow-Gap Semiconductors. Filed Feb. 13, 1979. Patented Aug. 12, 1980.

Patent application 6–148,856. Rocket Motor Arming-Firing Device FSU12/B. Filed May 12, 1980.

Patent application 6–153,811. Blazed Surface Relief Holographic Optical Elements. Filed May 27, 1980.

Patent application 6–156,157. Holographic Corrector Element. Filed June 3, 1980.

Patent application 6–162,351. Gas Pressurizer. Filed June 23, 1980.

Patent application 6–165,000. Near Infrared Polarizers. Filed July 1, 1980.

Patent application 6–165,913. Improved Booster. Filed July 3, 1980.

Patent application 6–172,585. Instrument for Measuring Dynamic Viscoelastic Properties. Filed July 28, 1980.

Patent application 6–176,376. Helicopter Extractable Cold Weather Water Liferaft. Filed Aug. 8, 1980.

Patent application 6–176,426. Smoke Generating Apparatus. Filed Aug. 8, 1980.

Patent application 962,854. End-Butt Optical Fiber Coupler. Filed Nov. 22, 1978. Patented Aug. 12, 1980.

Patent 4,213,198. Method for Classification of Sonar Echoes. Filed June 20, 1955. Patented July 15, 1980. Not available NTIS.

Patent 4,216,720. Rod-Fragment Controlled-Motion Warhead. Filed May 30, 1974. Patented Aug. 12, 1980. Not available NTIS.

Patent 4,216,766. Treatment of Body Tissue by Means of Internal Cavity Resonance. Filed Sept. 7, 1979. Patented Aug. 12, 1980. Not available NTIS.

Patent 4,220,195. Ion Drag Pumped Heat Pipe. Filed May 24, 1979. Patented Sept. 2, 1980. Not available NTIS.

Patent 4,222,173. Shaft and Bore Misalignment Measurement Tool. Filed Dec. 22, 1978. Patented Sept. 16, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–171,928. Digital Demodulator. Filed July 18, 1980.

Patent application 6–178,192. Synthesis of Dawsonites. Filed Aug. 14, 1980.

Patent application 6–183,707. An Improved Synthesis of 2,4, 8,10-Tetroxaspiro (5.5) Undecana. Filed Sept. 3, 1980.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-23-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-5-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-8-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGNS, GROUP 290—Vacant Industrial Arts; Household, Personal and Fine Arts.	1-8-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. CRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-1-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 3, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,401
PROCESS FOR NEUTRALIZING SULFONIC OR SULFURIC ACID ESTERS WITH CALCIUM OR BARIUM BASES

Robert C. Taylor, 963 Longview Rd., King of Prussia, Pa. 19406

Continuation of Ser. No. 61,800, Jul. 30, 1979, abandoned, which is a continuation of Ser. No. 869,393, Jan. 13, 1978, abandoned, which is a continuation of Ser. No. 697,511, Jun. 18, 1976, abandoned. This application Jan. 24, 1980, Ser. No. 114,933

Int. Cl.[3] **C07C** *143/34, 139/14, 141/10, 141/02*

U.S. Cl. 260—505 N

No Drawing. 16 Pages Specification

An improved method of preparing calcium or barium sulfonic acid or sulfuric acid ester salts is presented which comprises coneutralizing the corresponding sulfonic or sulfuric acid esters with a mixture comprised of a calcium or barium base and a base of an alkali metal, ammonia, or magnesium.

T100,402
METHOD AND MEANS FOR DEFECTIVE BIT PROCESSING IN A FAULT TOLERANT BUBBLE STORAGE SYSTEM

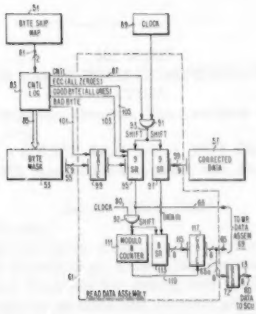
Abraham M. Gindi; Magdi R. Orfali, and Arvind M. Patel, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 66,272, Aug. 13, 1979. This application Jul. 7, 1980, Ser. No. 166,718

Int. Cl.[3] **G06F** *11/08, 11/00;* **G11C** *19/08*

U.S. Cl. 364—900

6 Sheets Drawing. 25 Pages Specification



A method and means for modifying up to k bits in each byte of (n+k) bits to be accessed with respect to counterpart minor loops of a sequentially accessed byte-organized major/minor loop memory array. The combination of bad byte location pointers and a byte mask is used to delete bits on bad bytes extracted from the memory or to insert zeroes into defective loop locations when bad bytes are written into the memory. Alternatively, the ith bit in each byte of (n+1) bits to be accessed may be modified through the utilization of the value of the ith bit written into the byte position of n+1st bit, while the ith bit of a defective byte position is zeroed. As a bad byte is extracted, the value of the n+1st bit is substituted for the ith bit. A dense list, rather than a sparse bad byte pointer list, is used.

T100,403
HYPOLIPIDEMIC AND ANTI-ATHEROSCLEROTIC 2- OR 3-(MONOSUBSTITUTED-AMINO) PHENYL COMPOUNDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

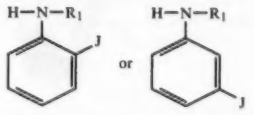
Filed Oct. 17, 1979, Ser. No. 85,650

Int. Cl.[3] **A61K** *31/195*

U.S. Cl. 424—319

No Drawing. 52 Pages Specification

Hypolipidemic and anti-atherosclerotic 2- or 3-(monosubstituted-amino) phenyl compounds of the formulae:



wherein R_1 is a saturated or unsaturated hydrocarbon radical of 8–19 carbon atoms which may be branched or unbranched and which may contain one or more radicals selected from the group consisting of saturated or unsaturated cycloalkyl, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl; J is

wherein Z is inter alia hydrogen, loweralkyl, hydroxy, loweralkoxy and loweralkoxyalkoxy, or J is carboxyloweralkyl, carboxyloweralkenyl, carboxyloweralkynyl, carboalkoxyloweralkyl, carboalkoxyloweralkenyl or carboalkoxyloweralkynyl.

T100,404
RUMEN-STABLE PELLET COATINGS

Stephen H. W. Wu, 1104 Meadow Ln., Kingsport, Tenn. 37663

Filed Feb. 29, 1980, Ser. No. 125,829

Int. Cl.[3] **A61K** *31/30, 31/32, 31/56, 31/58*

U.S. Cl. 424—32

No Drawing. 11 Pages Specification

Pellets are disclosed which are adapted for oral administration

to a ruminant, the pellets having a core material beneficial to ruminants postruminally, and a coating surrounding the core material which protects the core material in the rumen and releases it in the abomasum, said coating having an outer layer consisting essentially of a blend of about 55–75 parts by weight of a film-forming polymeric material containing at least one basic amino grouping and in which the nitrogen content is from 3 to 14% by weight of the total molecular weight of the polymeric material, e.g., cellulose propionate morpholinobutyrate, and about 45–25 parts by weight of a hydrophobic material such as aluminum oleate, and an inner layer consisting essentially of a blend of about 45–55 parts by weight of a film-forming polymeric material containing at least one basic amino grouping and in which the nitrogen content is from 3 to 14% by weight of the total molecular weight of the polymeric material, e.g., cellulose propionate morpholinobutyrate, and about 55–45 parts by weight of a hydrophobic material, said coating making up about 5 to about 50% of the weight of said pellet.

T100,405

PROCESS FOR PRODUCING A POWDERED FLAVORING MATERIAL

Eric D. Lund, Winter Haven, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1980, Ser. No. 118,886

Int. Cl.[3] A23L *1/222*

U.S. Cl. 426—651

No Drawing. 11 Pages Specification

A powdered orange flavor containing 27 fold orange oil adsorbed on rice starch was prepared by a menthol treatment process. The powder contained the equivalent flavoring potency of 18% by wt. of whole orange oil, which was the maximum obtainable; other rice starch samples contained lesser amounts and had lower folds. Two other edible polymers, egg albumin and Mor-rex (hydrolyzed cereal solids), also had some capacity, when treated with methanol, for polar orange oil components. These were less suitable than starch, however, because of inadequate concentration on the polymer, a low degree of folding, or distorted oil compositions.

REISSUES

MARCH 3, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

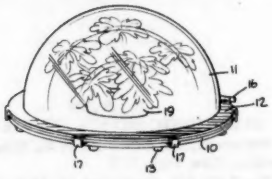
Re. 30,531
INFLATABLE TERRARIUM ASSEMBLY

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Original No. 3,939,607, dated Feb. 24, 1976, Ser. No. 533,518, Dec. 17, 1974. Application for reissue Jan. 18, 1978, Ser. No. 870,579

Int. Cl.³ A01G *9/02*

U.S. Cl. 47—69 **2 Claims**



1. An inflatable and deflatable collapsible closed terrarium assembly which can be inflated to assume a desired configuration for housing a potted *watered* plant [or other watered article] to be protectively enclosed, said assembly comprising a [disc-like] *flat* base and a dome attachable thereto, said dome being formed of a flexible non-self supporting clear plastic film envelope *to expose said potted plant to light incident to substantially the entire surface of the dome, said envelope* having *a height exceeding that of the potted plant and* an open mouth, a coupling ring [secured to] *surrounding* the mouth of the envelope and [sealably] joinable to the base to form a hermetically-sealed enclosure enveloping said *potted* plant [or other article] to prevent evporation therefrom, and a valve mounted on the envelope *at a point above said base* for selectively inflating said envelope to assume said configuration and deflating said envelope to a collapsed condition , *said base having an area greater than the area of the mouth of the envelope to define a base zone extending outwardly beyond the mouth, said envelope having an outwardly extending flange, said ring detachably clamping said flange to said base zone without penetrating said flange and said zone to effect hermetic sealing of said enclosure.*

Re. 30,532
FLAPPER VALVE WITH INDEPENDENT SPRING ACTION

Spencer P. Buckner, Houston, Tex., assignor to TRW Inc., Cleveland, Ohio

Original No. 4,005,732, dated Feb. 1, 1977, Ser. No. 607,339, Aug. 25, 1975. Application for reissue Nov. 30, 1978, Ser. No. 964,943

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—512.1 **3 Claims**

1. An improved valve of the type having a body with a fluid flow conduit therethrough, a valve seat surrounding said flow conduit, valve members for sealing said fluid flow conduit, stationary shaft means extending diametrically across said flow conduit for pivotally supporting said valve members within said body, and hinges for supporting said valve members on said shaft means, wherein the improvement comprises at least one separate helical torsion spring encircling a portion of said shaft means for each valve member for biasing said valve member toward its closed position, one leg of which is in contact with said valve member and the other leg of which is in contact with a stationary stop means, *said stop means comprising a pin member extending diametrically across said flow conduit parallel to said shaft means at a location spaced from said valve members to limit movement of said valve members in an opening direction.*

Re. 30,533
MANUALLY OPERATED LOG BREAKING DEVICE

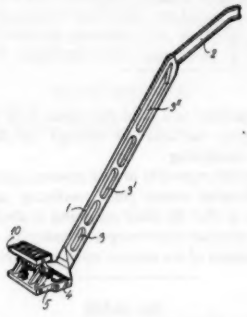
Victor A. Dushku, Rackarbergsgatan 34, 2 TR., 752 32 Uppsala, Sweden

Original No. 4,030,700, dated Jun. 21, 1977, Ser. No. 706,379, Jul. 19, 1976. Application for reissue Jun. 19, 1979, Ser. No. 50,121

Claims priority, application United Kingdom, Aug. 29, 1975, 35810/75

Int. Cl.³ B66F *15/00*

U.S. Cl. 254—113 **12 Claims**



1. A manually operated mechanical log breaking device comprising

a longitudinal extending lever member;

a first pressure plate extending from one end portion of said lever member;

a second pressure plate joined to said first pressure plate in a hinged relationship;

a third pressure plate;

a link system interconnecting said third plate and said first and second plates with said third plate spaced from said first and second plates,

said link system comprising an axle and three lever members, one end of each of said members being hingedly connected to said axle,

said members extending from said axle and being hingedly connected to said first, second and third pressure plates respectively.

Re. 30,534
ELECTRONIC FLASH INHIBIT ARRANGEMENT

George C. Harrison, Chelmsford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 4,162,836, dated Jul. 31, 1979, Ser. No. 917,477, Jun. 21, 1978. Application for reissue Oct. 17, 1979, Ser. No. 85,499

Int. Cl.³ G03B *3/10, 15/05*

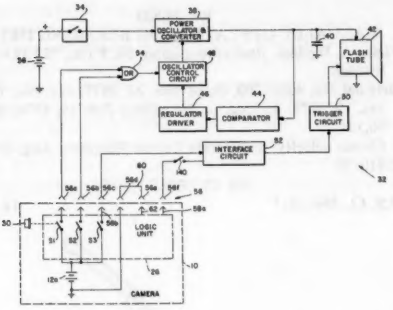
U.S. Cl. 354—139 **8 Claims**

7. Electronic flash apparatus for use with a camera of the type having automatic ranging means, electrically-energizable camera control means responsive to manual actuation for automatically operating the ranging means, and means for providing a camera signal commencing in response to the manual actuation of the control means, and wherein the camera ranging means is subject

to detrimental interference from spurious electromagnetic radiation,

said electronic flash apparatus having

an energy-storage capacitor and a flash-discharge tube charging means energizable by an applied supply voltage for producing an alternating voltage and a direct voltage in response thereto, and for charging the capacitor with the direct voltage,



means responsive to a flash fire signal from the camera for discharging the capacitor through the flash tube, and further comprising

control means responsive to said camera signal for disabling said charging means from producing said alternating voltage, so that the flash apparatus is disabled from producing spurious electromagnetic radiation, during at least the operation of the camera ranging means.

Re. 30,535

DEVELOPING DEVICE IN ELECTROPHOTOGRAPHIC COPYING APPARATUS

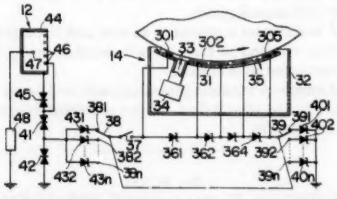
Shoji Kuroishi, and Manabu Mochizuki, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Original No. 4,021,111, dated May 3, 1977, Ser. No. 584,294, Jun. 6, 1975. Application for reissue May 3, 1979, Ser. No. 35,897

Claims priority, application Japan, Jun. 10, 1974, 49-65721

Int. Cl.³ G03G *15/10*

U.S. Cl. 355—10 **14 Claims**



1. In an electrophotographic copying apparatus comprising a movable member having a photosensitive surface and adapted to be moved along a predetermined path during which said surface is subject to charging, exposing to an image of an original to be copied to form an electrostatic latent image of the original thereon, developing of the latent image with a developing agent having toner, transfer printing of the developed image onto copy sheets, and cleaning of residual toner thereon, the improvement comprising:

a. a plurality of developing electrodes disposed along the path of movement of said surface in opposing relation thereto at a developing station,

b. means for supplying the developing agent between said electrodes and said surface,

c. voltage source means for providing a constant voltage [source for] *to* said electrodes,

d. means for distributing the supplied voltage from said source means to said respective electrodes in a graded manner which substantially conforms to that of a reference damping characteristic of potential on said surface along the path of movement thereof at the developing station, and

e. means for [varying the values] *changing the level* of [voltages] *voltage* applied to said respective electrodes without influence to said graded manner therebetween [in accordance with the value of potential of an electrostatic latent image on said surface to be developed].

Re. 30,536

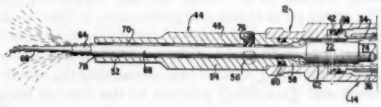
ULTRASONIC DEVICE AND METHOD

Rene J. Perdreaux, Jr., Brooklyn, N.Y., assignor to Cavitron Corporation, New York, N.Y.

Original No. 3,956,826, dated May 18, 1976, Ser. No. 452,627, Mar. 19, 1974. Application for reissue May 1, 1978, Ser. No. 902,304

Int. Cl.³ A61C *1/07*

U.S. Cl. 433—86 **18 Claims**



1. In an ultrasonic device having a casing, an energyzing means adjacent said casing, ultrasonic vibration means mounted in said casing and activated by said energyzing means, means for introducing fluid into an end of said casing, the improvement comprising

a hollow sleeve adapted to be insertably mounted in the end of the casing and in fluid communication therewith,

connecting means attached to one end of said vibration means and extending through said hollow sleeve, said connecting means being mounted at a spaced distance from the internal walls of said hollow sleeve, forming an annular nozzle adjacent said hollow sleeve anterior end for fluid to exit said nozzle in substantially a 360° annular stream, and

tool means axially fixed to said connecting means at the anterior end thereof.

Re. 30,537

METHOD FOR RINSING AND CHEMICALLY SANITIZING FOOD WARE ITEMS

Louis F. Fraula, and Stuart E. Athey, both of Troy, Ohio, assignors to Hobart Corporation, Troy, Ohio

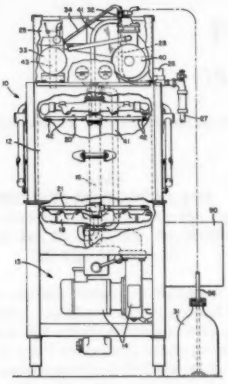
Original No. 4,147,558, dated Apr. 3, 1979, Ser. No. 835,197, Sep. 21, 1977. Application for reissue Aug. 20, 1979, Ser. No. 67,865

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—10 **10 Claims**

19. A method for rinsing food ware items in a wash chamber within a warewasher having a washing system using recirculated

cleaning solution pumped from a sump below the wash chamber, comprising:



(a) at a location separate from the washing system, and while the items are being sprayed with cleaning solution, preparing a predetermined quantity of a rinse solution comprising fresh water and a chemical sanitizing agent substantially uniformly distributed therein by:

(i) mixing a predetermined quantity of the chemical sanitizing agent into a predetermined quantity of the fresh water as the water is drawn from a suitable supply thereof, and

(ii) terminating the supplying of the water after the predetermined quantity of rinse solution has been prepared, and

(b) independently of the fresh water supply subsequently pumping and spraying substantially the entire predetermined quantity of the solution a single time onto the food ware items within the warewasher and allowing all the rinse solution to drain from the ware items into the sump.

Re. 30,538

3-DEOXY-1α-HYDROXYCHOLECALCIFEROL

Hector F. DeLuca; Heinrich K. Schnoes, both of Madison, Wis., and Hing-Yat Lam, Winnepeg, Canada, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Original No. 3,906,014, dated Sep. 16, 1975, Ser. No. 480,211, Jun. 17, 1974. Application for reissue Mar. 7, 1977, Ser. No. 774,996

Int. Cl.[3] **C07J** *9/00*

U.S. Cl. 260—397.2 **5 Claims**

1. 3-deoxy-1α-hydroxycholecalciferol.

PLANT PATENTS

GRANTED MARCH 3, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,657
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jul. 13, 1979, Ser. No. 57,494
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described characterized by buds and flowers which are a soft to medium shade (or shades) of pink, the buds and flowers resembling Eleanor (U.S. Plant Pat. No. 2,175) in color and Fire Princess (U.S. Plant Pat. No. 3,084) in form and size, the buds and flowers having a distinct and unique appearance as compared to other pink miniature roses, said flowers being very double, of rounded form; and further characterized by a plant which is vigorous and compact with abundant small foliage and easy to propagate from soft wood cuttings or by budding, with an abundance of flowers borne singly or several to the stem in loose clusters.

4,658
ROSE PLANT

Reimer Kordes, Aspern, Fed. Rep. of Germany, assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 1, 1979, Ser. No. 80,381
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new variety of asexually reproduced Hybrid Tea rose plant of the outdoor bush type, substantially as herein shown and described, and being particularly characterized by the coloration of its blooms from light pink to pale apricot, to creamy white, said blooms having from 28 to 34 petals, plus 1 to 3 petaloids, and about 125 stigma, said blooms being usually borne one to a stem, and having a strong spicy fragrance.

4,659
ROSE PLANT

Jack E. Christensen, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 24, 1979, Ser. No. 87,810
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. An outdoor bush rose plant of the hybrid miniature class, substantially as shown and described, being a dwarf seedling mainly used for garden decoration, said plant being much branched and bushy and bearing its blooms usually singly on strong, medium-length to long stems, said blooms being from about 1.5 to 2.0 inches in diameter, having 18 to 28 petals and 1 to 7 petaloids, the overall color effect of the newly opened flower being orange-apricot and yellow.

4,660
ROSE PLANT - SUPRENSE

Keisuke Asaoka, Nishio, Japan, assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Dec. 17, 1979, Ser. No. 104,566
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—23 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the yellow hue of the bud and the greenish white to white bloom on the plant otherwise identical to the variety Faberge.

4,661
PEACH TREE

Grant Merrill, deceased, late of Red Bluff, Calif., and Lucile B. Merrill, executrix, 325 Breese Ave., Red Bluff, Calif. 96080

Filed Jan. 11, 1980, Ser. No. 111,268
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree, substantially as illustrated and described, which is particularly characterized by general similarity, in tree and fruit, to the Springcrest but ripening of the fruit is approximately five to six days later.

4,662
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 28, 1980, Ser. No. 115,742
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a soft yellow color being of a shade similar to Sulphur Yellow ½, the bud and flower resembling the variety Debbie (U.S. Plant Pat. No. 2,911) in form and size and, when grown outdoors, also resembling Debbie, in coloring; and further characterized by a plant of vigorous, compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne singly or in loose clusters of 3 to 5 or more.

PATENTS

GRANTED MAR. 3, 1981

ERRATA

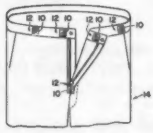
For CLASS	See PATENT NO.
434–227	4,253,248
434–022	4,253,249
474–135	4,253,343
474–096	4,253,344
493–200	4,253,383
440–084	4,253,414
131–010.5	4,253,508
411–214	4,253,509
180–139	4,253,540
180–168	4,253,541
052–655	4,253,579
182–239	4,253,643
250–315.2	4,254,033
564–387	4,254,056
564–455	4,254,057
564–492	4,254,059
564–479	4,254,060
564–479	4,254,061
570–211	4,254,062
260–927 R	4,254,073
428–283	4,254,139
424–275	4,254,162
432–025	4,254,221
525–350	4,254,250
525–451	4,254,251
546–059	4,254,269
369–026	4,254,307

PATENTS

GRANTED MARCH 3, 1981

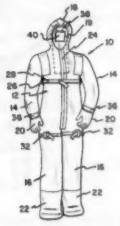
GENERAL AND MECHANICAL

4,253,197
INDICATION ASSEMBLY
Keith F. Posta, Rte. 2, Box 188D, Inverness, Fla. 33650
Filed Mar. 2, 1979, Ser. No. 16,727
Int. Cl.[3] A41D *11/00*
U.S. Cl. 2—69 **6 Claims**



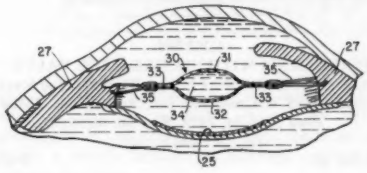
1. An indication assembly of the type primarily designed to facilitate the placing of clothing on the human body, said indication assembly comprising: at least one garment, a plurality of indication means mounted on said garment at predetermined spaced apart locations from one another, each of said indication means disposed at a location substantially corresponding to a position on said garment normally grasped by one while donning said garment, each of said indication means further disposed for substantially sequential grasping by one donning said garment, each of said plurality of indication means comprises indicia mounted thereon, said indicia configured to represent a predetermined sequential cue point, whereby teaching one to dress through utilization of said plurality of indication means is facilitated.

4,253,198
RESCUE SUIT
James R. Estabrook, 17 Waterhouse St., Somerville, Mass. 02143
Filed May 29, 1979, Ser. No. 43,385
Int. Cl.[3] A41D *3/00, 13/00*
U.S. Cl. 2—82 **7 Claims**



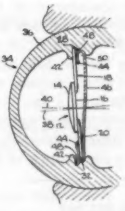
1. A rescue suit to be worn by a human in cold water, the suit comprising a body portion, a pair of arm portions and a pair of leg portions extending from the body portion, each of the leg portions terminating in a boot portion and each of the arms terminating in a glove portion, each of the boot portions including material having greater tensile strength than the remaining part of the leg portion, the body portion having an external surface, a first belt loop and a second belt loop extending from the external surface, the first belt loop positioned in close proximity to the junction between an arm portion and the body portion and the second belt loop positioned in close proximity to the junction between the other arm portion and the body portion, and a safety belt positioned within said belt loops for securement of a rescue device.

4,253,199
SURGICAL METHOD AND APPARATUS FOR IMPLANTS FOR THE EYE
Anton Banko, New York, N.Y., assignor to Surgical Design Corporation, New York, N.Y.
Filed Sep. 25, 1978, Ser. No. 945,537
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **22 Claims**



8. A lens implant for the eye comprising:
a lens portion of a material which is deformable over at least a portion of its surface to have a variable focal length,
means attached to said lens portion adapted to hold connecting means to connect the implant to the ciliary body of the eye, and to transmit the forces produced by the ciliary body to said lens portion to cause it to deform.

4,253,200
INTRAOCULAR LENSES
Charles D. Kelman, 73 Bacon Rd., Old Westbury, N.Y. 11568
Filed Nov. 16, 1979, Ser. No. 95,056
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **27 Claims**



1. An intraocular insert suitable for use as an artificial lens in the interior of a human eye, said eye interior having upper and lower portions and including a pupil, an iris and an anterior capsule wall with a ciliary sulcus defined between said iris and said anterior capsule wall, said ciliary sulcus comprising a first interior peripheral surface extending circumferentially at said upper and lower portions of the eye when viewed in cross-section, said eye interior further including a posterior capsule wall and a second interior peripheral surface defined between said anterior capsule wall and said posterior capsule wall, said second interior peripheral surface extending circumferentially at said upper and lower portions of the eye when viewed in cross-section, said eye further including an optical axis passing

through the center of said pupil, the distance between said first interior peripheral surface and the optical axis of said eye being greater than the distance between said second interior peripheral surface and the optical axis of said eye, said insert comprising a medial light focusing lens body having an optical axis and first and second opposite peripheral portions, first position fixation means joined to said first peripheral portion and having a first seating portion extending generally radially beyond said first peripheral portion, said first seating portion being engageable with one of said interior peripheral surfaces, second position fixation means being joined to said second peripheral portion of said lens body and having a second seating portion extending generally radially beyond said second peripheral portion, said second seating portion being engageable with the other said interior peripheral surface to substantially align the optical axis of said lens body with the optical axis of said eye, said position fixation means including means for permitting one of said seating portions to be resiliently seated at the first interior peripheral surface of the eye and for permitting the other of said seating portions to be resiliently seated at the second interior peripheral surface of the eye.

4,253,201

PROSTHESIS WITH SELF-SEALING VALVE

David A. Ross, 46 E. Oak St., Chicago, Ill. 60611, and Steven M. Aperavich, 4515 N. Green Bay Rd., Racine, Wis. 53404

Filed May 24, 1979, Ser. No. 41,981
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—36 **4 Claims**

1. In an inflatable, implantable prosthesis which comprises a flexible, inflatable thin walled container and a self-sealing valve on said container so that fluid can be introduced into said container to inflate or deflate said container, the improved valve which comprises a double walled top having a self-sealing gel deposited in the space between the walls, said top being secured to the inside of the container wall, a side wall depending from said top, and a bottom, said side wall connecting the top and the bottom and defining a fluid receiving chamber having at least one opening therein, said side wall being comprised of a flexible material which permits said fluid receiving chamber to be collapsible to form a more compact uninflated container that may be implanted using a minimum size incision and which expands after implantation so that fluid can pass to and from said chamber into the interior of the container.

4,253,202

AUTOMATIC ADJUSTING WAVE GUTTER FOR SWIMMING POOLS

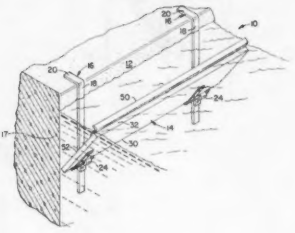
Forbes Norris, 118 Great Circle Dr., Mill Valley, Calif. 94941

Continuation of Ser. No. 891,669, Mar. 30, 1978, abandoned. This application Aug. 10, 1979, Ser. No. 65,497
Int. Cl.[3] E04H *3/18;* **E02B** *7/40*
U.S. Cl. 4—497 **4 Claims**

1. Apparatus for forming an adjustable wave-dissipating gutter mounted to a planar, solid vertical side wall of a water-containing pool, the apparatus comprising:

an elongate wall member having a pair of spaced, longitudinal edges, a planar surface formed to extend between the longitudinal edges, and flotation means for allowing the wall member to be buoyant in water;

means attached to one of said longitudinal edge for mounting the wall member to the side wall of the pool and for positioning said longitudinal edges substantially parallel to the pool side wall and to the waterline, a one of said longitudinal edges being positioned relatively outwardly of the other of said longitudinal edges and the pool side wall, the mounting means including means for allowing the wall member to pivot about an axis that is substantially parallel to said longitudinal edges between a first almost vertical position above a horizontal plane containing said axis and a second almost vertical position below said horizontal plane; and



a tripping lip attached to the wall member and extending along and in juxtaposed relation with the other said longitudinal edge, the tripping lip extending perpendicularly upwardly from said wall and forming a wall portion that extends perpendicularly away and inwardly from said planar surace of said wall member in a direction toward said pool wall to which said wall member is attached;

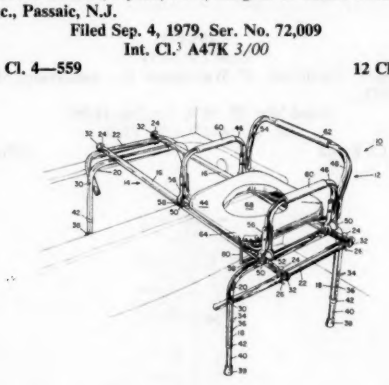
whereby, waves generated in the water contained by the pool and reaching the pool side wall are trapped and attenuated between the buoyant member and pool side wall.

4,253,203

FOLDING TRANSFER BENCH

Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.

Filed Sep. 4, 1979, Ser. No. 72,009
Int. Cl.[3] A47K *3/00*
U.S. Cl. 4—559 **12 Claims**



1. A transfer bench apparatus comprising:

a chair;

at least four roller means attached to the underside of said chair;

a bench including track means comprising at least two substantially parallel and substantially equally long tubular tracks for supporting said roller means attached to said chair, said two tracks defining a space therebetween, said bench further including leg means for supporting said track means; and,

releasable means attached to said chair for loosely engaging at least one of said tubular tracks thereby preventing said chair from falling off of said bench,

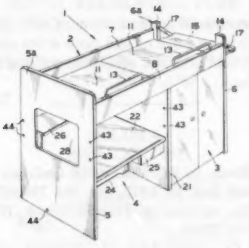
wherein said chair faces away from the space between said two tubular tracks and wherein said releasable means can be disengaged from at least one of said tubular tracks thereby completely disengaging said chair from said bench and allowing said chair to be rotated by 180° in a plane parallel to said tubular tracks and re-engaged with said tubular tracks facing in the opposite direction from its previous engagement.

4,253,204

BED FURNITURE ASSEMBLY

Makoto Tasaka, No. 15-17 1-Chome, Ohkura, Setagaya-ku, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,365
Int. Cl.³ A47B *83/00, 87/00*
U.S. Cl. 5—2 R **6 Claims**



1. In a bed furniture assembly including a bed section arranged at the upper portion of the assembly, a housing section and a desk section arranged on one and the other sides, respectively, of a clearance provided under the bed section, which comprises:

a plurality of substantially flat panels, boards and frames adopted to constitute the assembly;

means for removably fixing said panels, boards, and frames to one another when assembled to form said bed section, housing section and desk section and, such that, when disassembled, said panels, boards, and frames are capable of being laid substantially flat one above another, said plurality of panels including first and second upright end panels between which said bed section, housing section and desk section are positioned and said plurality of frames including at least said first and second frames interconnecting said first and second end panels and further comprising a third upright panel separating said housing section and said desk section.

4,253,205

SOFA-SLEEPER

Aloysius J. Mikos, Skokie, Ill., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

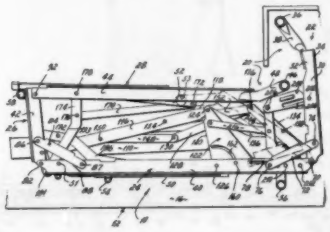
Filed Mar. 26, 1979, Ser. No. 24,029
Int. Cl.³ A47C *17/14*
U.S. Cl. 5—13 **31 Claims**

1. A foldable sofa-sleeper bed frame adapted to be mounted upon a sofa frame having back and side members and a stationary front rail which define a rectangular storage enclosure, said bed frame comprising a plurality of pivotally interconnected head, body, intermediate and foot sections, said bed frame sections each including a pair of opposed side rails, and a fixture supporting said bed frame for movement between: (1) a retracted position in which the bed frame is contained within said storage enclosure behind said front rail substantially entirely below the plane of the top surface of said front rail to form a sofa seat, and (2) an extended position in which said bed frame lies above and extends forwardly over said front rail to form a bed, said support fixture comprising:

support means affixable to the side frame members of said sofa and having a front fixed pivot and rearwardly thereof a movable pivot,

front support lever means pivotally connected between said front fixed pivot and said bed frame,

rear support lever means pivotally connected between said movable pivot and said bed frame, and



control link means pivotally connected between said front and rear support lever means operable to control the movement of said rear support lever means as said bed frame is moved between its extended position and its retracted position,

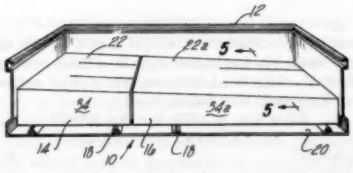
said front and rear support lever means being operable to support the movement of said bed frame between the retracted position within said sofa and the extended position wherein the interconnected sections extend out and over the stationary front rail of said sofa frame in substantially co-planar horizontal relation.

4,253,206

BODY SUPPORT FOR A CASKET

John R. Cherry, 1372 SW. Knollwood Dr., Palm City, Fla. 33490

Filed Jun. 5, 1979, Ser. No. 45,789
Int. Cl.³ A47C *19/00*
U.S. Cl. 5—82 R **12 Claims**

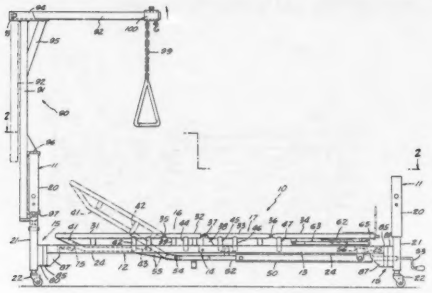


1. A body support comprising a plurality of bed sections disposed end-to-end on a supporting surface to support a body in a recumbent position above said surface, each of said bed sections including a top support portion and integral depending upright side portions extending downwardly below said top portion, said top portion being formed of sheet material operable to sag under the load of a body positioned on said top portion to thereby form a concave top surface extending between said side portions to restrain sideways movement of said body, and transverse base members extending transversely of said body support and interposed between said bed sections and said support surface to engage said side portions, said side portions being collapsible around said transverse base members in response to a downward body load above a predetermined magnitude to lower said top portion toward, said supporting surface.

4,253,207
BED SUPPORTABLE PATIENT HELPER

Stanley T. Marcyan, 515 W. Windsor Rd., Glendale, Calif. 91204

Division of Ser. No. 923,243, Jul. 10, 1978, Pat. No. 4,202,062.
This application Jun. 14, 1979, Ser. No. 48,646
Int. Cl.[3] A61H *1/02;* A61G *7/10*
U.S. Cl. 5—84 4 Claims



1. A patient helper attachable to a bed head board of the type having a rigid panel supported by a pair of legs extending downwardly from the opposite ends thereof, said helper comprising:

a tubular upright having bracket means rigidly secured to the upper end thereof;

a tubular lever arm having one end thereof pivotally connected to said bracket means for pivoting movement in a vertical plane about a horizontal axis crosswise of said bracket means between an extended operating position overlying a bed and a retracted non-operating position lying vertically beside said upright;

manually operable clamping means mounted in one of a pair of brackets fixed to said upright adapted to embrace the upper and lower transverse edges of a bed head board panel for holding said upright fixedly and non-rotatably secured to said head board panel; and

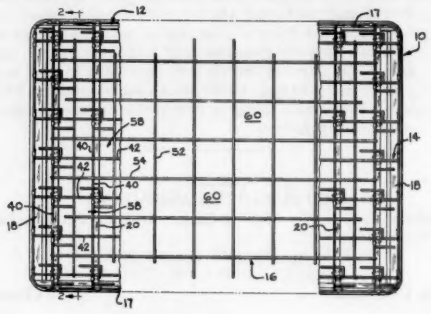
handgrip means depending from said lever arm positioned within reach of a patient in a bed equipped with said helper for use in supporting equipment and aiding the patient in changing positions.

4,253,208
BOX SPRING ASSEMBLY WITH BASIC WIRE GRID

William L. Hancock, Lexington; John P. Kitchen, Georgetown, and Ned W. Mizelle, Lexington, all of Ky., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Aug. 6, 1979, Ser. No. 63,903
Int. Cl.[3] A47C *23/04, 23/05*
U.S. Cl. 5—247 7 Claims

1. In a box spring assembly which includes a generally rectangular horizontal frame and a wire spring assemblage mounted on said frame and extending upwardly therefrom, said assemblage including a plurality of straight wires arranged above the frame in a criss-cross fashion in which some wires are substantially parallel and spaced apart horizontally in one direction and other wires are substantially parallel and spaced apart horizontally in another direction substantially perpendicular to said one direction whereby to form a generally horizontal spring wire deck spaced above said frame and having a continuous arrangement of rectangular spaces formed by said wires; a grid unit formed of basic wire and supported on the top side of said deck for the purpose of bridging said spaces, said grid unit comprising a plurality of straight first wires that are substantially parallel to said some deck wires and are spaced apart horizontally and a plurality of straight second wires that are substantially parallel to said other deck wires and are spaced apart horizontally, said grid wires being secured to each other to form said grid unit and being located to bridge said spaces in mutually perpendicular directions, and downwardly extending return bent-upon-themselves hook

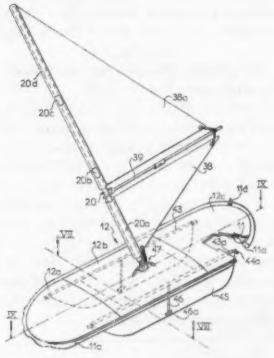


portions on the ends of at least some of said grid wires, said hook portions having some of said deck wires confined therein so as to restrain said grid unit against horizontal shifting movement on said deck.

4,253,209
SAIL BOARDS

Patrick Carn, Route de Benodet, 29000 Quimper, France

Filed Jan. 10, 1977, Ser. No. 758,087
Claims priority, application France, Jan. 9, 1976, 76 00498; Dec. 16, 1976, 76 37970
Int. Cl.[3] B63B *7/08, 35/72;* B63H *9/06*
U.S. Cl. 9—310 E 11 Claims



1. In a floating device, particularly a sail board, having a hull equipped with at least a keel, a mast attached to the hull, and a sail attached to the mast, the improvement which comprises the hull having

at least one inflatable bladder forming a floatation chamber; and

an envelope for the bladder, subdivided transversely to the longitudinal axis of the hull into a plurality of demountable, rigid or semi-rigid components, the envelope having three components, a middle component, and two end components,

the envelope components partially covering the inflatable bladder, particularly the top of the bladder, the bottom being adapted for direct contact with the water, the said envelope components being transversely subdivided and maintained rigidly assembled by assembly and rigidifying elements positioned in one or more rows following the

longitudinal axis of the hull, each assembly and rigidifying element being fixed to an envelope component in an arrangement capable of permitting alignment of the assembly elements in a single row,

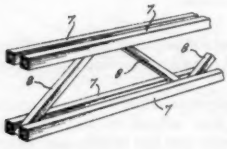
the said assembly and rigidifying elements comprising a hollow beam of preferably polygonal cross-section and at least one locking pin of cross-section corresponding to that of the beam, the pin engaging slidably within the internal channel of the beam and providing the connection between two adjacent beams, particularly at the point in the regions of the transverse subdividing lines of the demountable envelope components and of the beams.

4,253,210

METAL TRUSS STRUCTURE

Andre Racicot, 7765 Gouin Blvd., East, Montreal, Canada (H1E 2A2)

Filed Sep. 10, 1979, Ser. No. 74,109
Int. Cl.³ E04C *3/02*
U.S. Cl. 14—17 **1 Claim**



1. A lattice girder comprising two spaced elongated chords, each including a pair of laterally spaced-apart, parallel, rectangular tubing chord members and web members rigidly interconnecting said chords, and serially spaced apart from one another along said chords, each web member consisting of a straight rectangular tubing web member, of uniform cross-section throughout its length and having its end portions extending between and applied flat against opposite inner faces of the rectangular tubing chord members, both ends of each rectangular tubing web member being cut so as to extend substantially parallel to the rectangular tubing chord members, and weld lines securing said end portions of said web members to each of said rectangular tubing chord members, said weld lines extending at the inner and outer sides, respectively, of said chord members along all the longitudinal extensions between said rectangular tubing chord members and said web members, said weld lines extending longitudinally of said chords and at two spaced zones longitudinally of each web member.

4,253,211

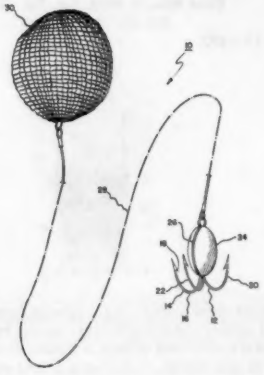
TOILET BOWL CLEANING APPARATUS

Fred Mockel, Box 80, Rte. 2, Williston, N. Dak. 58801

Filed Oct. 5, 1979, Ser. No. 82,117
Int. Cl.³ B08B *9/02*; **A47K** *11/10*
U.S. Cl. 15—104.3 G **6 Claims**

1. Apparatus for cleaning a toilet bowl which comprises:

a generally u-shaped member having first and second legs joined by an arcuate axial portion, said first leg having a sharp point thereon, a weight disposed on said second leg, an elongated flexible member having one end fixed to the



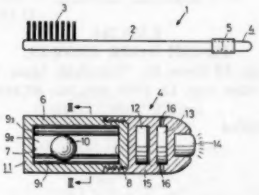
free end of said second leg and a swab fixed to the other end of said elongated flexible member.

4,253,212

TRAINING APPLIANCE FOR TOOTH BRUSHING

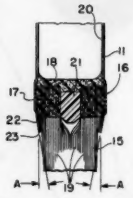
Kinya Fujita, 326 Nagasawa, Yokosuka-shi, Kanagawa-ken, Japan

Filed May 29, 1979, Ser. No. 42,932
Int. Cl.³ A46B *15/00*
U.S. Cl. 15—167 R **2 Claims**



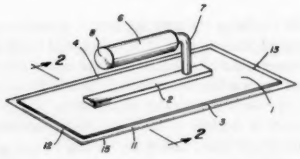
1. A tooth brushing training appliance, comprising: a tooth brush composed of an elongated stem adapted to be grasped by the human hand and a head portion at one end of said stem, said head portion having bristles attached to one face thereof and adapted to be inserted into the mouth of a human being for brushing teeth; a hollow cylindrical body mounted on the opposite end of said stem, said body having an elongated internal cavity which extends lengthwise of said stem and which has a longitudinally extending side wall; a plurality of circumferentially spaced-apart, longtiudinally extending electrodes mounted on the internal surface of said side wall, a movable electrically conductive member disposed inside said cavity for lengthwise movement in said cavity between the ends thereof when said body is inclined with respect to the horizontal and for lateral movement in said cavity when said body is moved arcuately around its lengthwise axis so that said electrically conductive member contacts two adjacent electrodes to provide an electrical connection therebetween; an electrically operated light emitting device mounted on said body, an electrically operated sound emitting device mounted on said body, a battery mounted on said body, an electrical circuit connecting said battery in circuit with said electrodes and said light emitting device and said sound emitting device so that said devices are actuated when said electrically conductive member contacts two adjacent electrodes in said cavity.

4,253,213
PAINT BRUSH
Frank Marino, Baldwin, N.Y., assignor to The Wooster Brush Company, Wooster, Ohio
Filed Mar. 5, 1979, Ser. No. 17,690
Int. Cl.[3] A46B *3/06*
U.S. Cl. 15—192 **6 Claims**



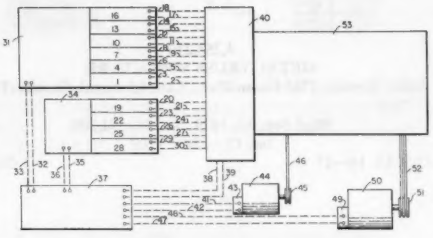
2. A paint brush comprising a tubular ferrule having a first end and a second end, a bristle body having bristles surrounded by said first end of said ferrule, a handle attached to said second end of said ferrule, a skirt at said first end of said ferrule, and ribs and grooves on an inner surface of said skirt extending parallel to said bristles for orienting the bristles of said bristle body and preventing the formation of gaps between the bristles and said ferrule, a spacer member positioned within said tubular ferrule at a spaced position from said inner surface of said skirt, said bristles being held in oriented condition between said inner surface and said spacer member, said spacer member being located at a position inset from said first end of said ferrule, and said inner surface of said skirt being sloped inwardly away from said handle to provide increased engagement of said ribs and grooves with said bristles in the area where said bristles extend outwardly from said first end of said ferrule.

4,253,214
FINISH WORK TROWEL
Richard Bushee, 19 Grove St., Wakefield, Mass. 01880
Filed Aug. 13, 1979, Ser. No. 65,954
Int. Cl.[3] B05C *17/10*
U.S. Cl. 15—235.4 **2 Claims**



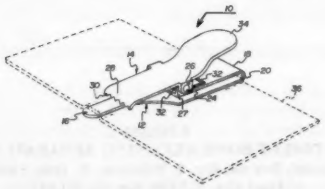
1. A finish work trowel for applying finish coats of plaster comprising:
an elongated flat metal, rectangular, rigid base plate having a length of at least 8 inches and a width of at least 2½ inches,
a flexible, resilient, essentially non compressible trowel blade having a smooth lower surface, said blade having a uniform thickness in the order of ⅛ inch and a feathered edge forming its periphery, said blade edge extending uniformly beyond the entire perimeter of said plate a distance of approximately ½ inch from said plate perimeter,
means securing the upper surface of said blade to the bottom of said base plate,
an elongated handle and means securing said handle at one end only to said base plate, said elongated handle being parallel to the length of said base plate and said means securing said handle comprises an elongated reinforcing bar rigidly secured to the upper surface of said base plate and a support arm connected at one end to said reinforcing bar and at the other end to one end of said elongated handle supporting said elongated handle parallel to said base plate.

4,253,215
LINT CLEANING APPARATUS FOR AUTOMATIC CONTROL OF COTTON QUALITY
Gino J. Mangialardi, Jr., Greenville, Miss., assignor to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.
Continuation-in-part of Ser. No. 866,077, Dec. 30, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,407
Int. Cl.[3] D01B *1/00*
U.S. Cl. 19—66 CC **9 Claims**



1. An apparatus for automatically controlling cotton quality in a lint cleaning apparatus comprising in combination the following:
(a) an input-output manifold section to receive lint cotton;
(b) an input duct affixed to said input-output manifold through which said lint cotton may enter said manifold section;
(c) a first measuring means attached to said input duct, said measuring means measuring a plurality of quality signals of said lint-cotton;
(d) a first synchronizing means communicating with said measuring means said synchronizing means combining the plurality of measured qualities into a single output signal;
(e) a controlling means communicating with said synchronizing means, said controlling means receiving the single output signal from said synchronizing means and adjusting a lint cleaning apparatus for proper cotton quality.

4,253,216
TAG AND NOTE CLIP
James Brown, 2330-10 Grand Ave., San Diego, Calif. 92101
Filed Dec. 3, 1979, Ser. No. 99,403
Int. Cl.[3] B42F *1/00;* **A44B** *13/00*
U.S. Cl. 24—67 AR **1 Claim**



1. A removable note clip comprising:
(a) a non-pivoting stationary member having at least one generally planar projecting stationary prong;
(b) a replaceable sheet having adhesive on one side thereof and being pressed with adhesive against said prong to

define an adhering side and non-adhesive side of said clip and non-pivoting member;

(c) a clasp member being pivotally mounted on said non-pivotal member and having a clamping prong pivotal from a position clear of said stationary prong and said sheet to a position contacting said sheet, said clasp member including pressure-applying member, and including means biasing said clamping prong against said sheet, whereby said clip can be releasably adhered to a surface with a note engaged between said clamping prong said sheet and;

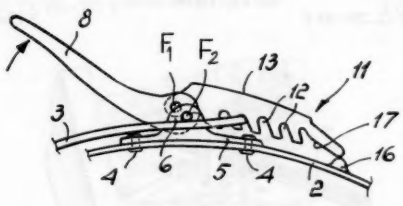
(d) said stationary member defining a deep bay extending beyond the pivotal connection between said member and said sheet extends fully into said bay to raise the center of adhesion relative to the center of gravity of said clip to improve the stability thereof when same is adhered with the prong downwardly extended.

4,253,217

LACING SYSTEM FOR SKI BOOTS

Lorenzo Marzocchi, Bologna, Italy, assignor to Garmont S.p.A., Volpago del Montello, Italy

Filed May 24, 1979, Ser. No. 42,262
Int. Cl.³ A43C *11/14*
U.S. Cl. 24—69 SK **5 Claims**



1. A lacing system for ski boots adapted to pull tight around a skier's foot the two flaps of the boot, comprising a connecting link hingedly secured on one of the flaps of the boot and a pair of levers secured on another of said flaps each of said levers being movable from an opening position into a closing position and viceversa, a first of said levers having a rack formation allowing engagement with said connecting link, a second of said levers having first hinge means defining a first fulcrum point thereon for said first lever, said second lever having second hing means for hingedly securing it on said another flap, said second hinge means defining a second fulcrum point at a distance from said first fulcrum point, thereby to allow said first fulcrum point to move along an arc of a circle the centre of which coincides with said second fulcrum point, when said second lever is rotated about said second fulcrum, said first fulcrum point being located nearer to said one flap than said second fulcrum point when said second lever is in its opening position and said first fulcrum point being located farther from said one flap than said second fulcrum point when said second lever is in its closing position thereby to additionally tighten the closure when said first lever is in its closing position and its rack formation in engagement with said connecting link.

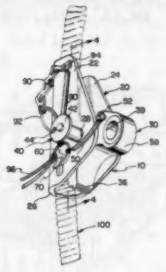
4,253,218

SPRING LOADED ASCENDER

Peter E. Gibbs, 854 Padley St., Salt Lake City, Utah 84108

Filed May 17, 1979, Ser. No. 39,941
Int. Cl.³ F16G *11/04*; A44B *21/00*
U.S. Cl. 24—134 R **4 Claims**

1. A safety clamp appliance comprising a housing having parallel side walls and a U-shaped rear wall, said housing being longitudinally slidable on a safety rope, a brake lever means having a brake means end and a handle end with a pivot point intermediate the ends, an actuating spring means connected at one end to said handle end of said brake lever means and to said housing at the other end, said brake lever means being pivoted by said actuating spring means into constant engagement with the safety rope, and a disconnect means for disconnecting said



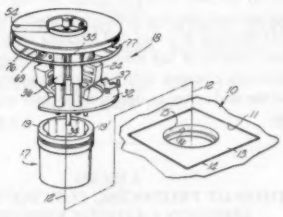
actuating spring means from said housing thereby changing the safety clamp appliance from being spring loaded to being non-spring loaded, said disconnect means being a keeper ring.

4,253,219

WELL SLIP ASSEMBLY

Igor Krasnov, Huntington Beach, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Feb. 14, 1979, Ser. No. 12,130
Int. Cl.³ E44B *21/00*; E21B *3/04*
U.S. Cl. 24—263 D **28 Claims**



1. A slip assembly comprising:

a first structure adapted to be supported on a well drilling rotary table in a relation to turn with the table;

a second structure mounted to said first structure for upward and downward movement relative thereto;

a plurality of slips which have inner faces for gripping a well pipe and which are connected to said second structure for movement upwardly and downwardly therewith relative to said first structure and the rotary table between lower active positions and upper retracted positions;

said slips having outer wedge surfaces engageable with coacting slip bowl surfaces to cam the slips inwardly into tight gripping engagement with a well pipe upon downward movement of the slips to said active positions;

latch means for releasably retaining said second structure and slips in said lower positions; and

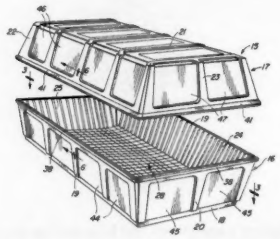
yielding means containing a confined pressurized fluid urging said second structure and slips upwardly relative to said first structure and acting to return them to said upper retracted positions when said latch means are released.

4,253,220

BURIAL VAULTS

Gerald L. Work, Spokane, Wash., assignor to Wilbert, Inc., Forest Park, Ill.

Filed Jun. 13, 1979, Ser. No. 47,983
Int. Cl.³ A61G *17/00*
U.S. Cl. 27—35 **4 Claims**



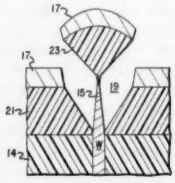
1. A burial vault comprising
(a) a molded plastic resinous base including
  (1) a bottom wall;
  (2) side walls each having
    a. an inner surface; and
  (3) end walls each having
    a. an inner surface;
(b) a molded plastic resinous cover or dome including
  (1) a top wall having
    a. an inner surface;
  (2) side walls; and
  (3) end walls each having
    a. an inner surface;
(c) at least certain of the said side walls and end walls of the said base and of the said cover or dome having a series of parallel reinforcing ribs on the said inner surfaces thereof;
(d) at least certain of the said reinforcing ribs on the said base and on the said cover or dome having coacting latching grooves and latching tongues formed therein; and
(e) said latching grooves and latching tongues in the assembled position of the said base and cover or dome being latchingly engaged with each other to retain the said base and the said cover or dome in securely assembled relationship.

4,253,221

METHOD OF PRODUCING LOW VOLTAGE FIELD EMISSION CATHODE STRUCTURE

Joe K. Cochran, Jr., Marietta, Ga.; Jae-Do Lee, Towanda, Pa., and Alan T. Chapman, Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Jun. 14, 1979, Ser. No. 48,503
Int. Cl.³ H01J *9/02, 9/12*
U.S. Cl. 29—25.18 **10 Claims**



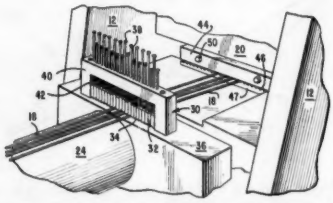
1. A method of making a low voltage field emission device comprising the steps of:
providing an oxide-metal composite which consists of a plurality of metallic fibers unidirectionally aligned in an oxide matrix;
etching the oxide matrix to a desired depth to expose the fibers;
forming a needle-like tip on the fibers;
depositing in a direction approximately parallel to the axes of the fibers a layer of insulating material on the oxide matrix to cause the formation of inverse truncated cones of insulating material on the fibers and holes in the layer of insulating material about the fibers;
depositing in a direction approximately parallel to the axes of the fibers a metal film on the insulating layer and the insulating cones to produce a cellular grid whose openings correspond in number and distribution to the sites of the fibers; and
removing the cones of insulating material from the fibers.

4,253,222

APPARATUS FOR APPLYING ASSEMBLED CONNECTOR TERMINALS TO A PLURALITY OF LEADS

Vincent B. Brown, Prospect Heights, and Donald G. Schreiner, Wheeling, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 63,849
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—33 F **5 Claims**



1. In apparatus for applying terminals to a plurality of leads including clamping means for gripping and advancing said leads from a supply source toward a terminal; means for bringing said terminal and said leads into electrically conductive engagement; and means for severing said leads into segments of predetermined length, the improvement comprising:
tensioning means positioned to individually tension said leads with a predetermined tension while being gripped and advanced by said clamping means, said tensioning means comprising a plurality of individual feet positioned adjacent a stationary surface, a plurality of spring biasing means positioned to act on said plurality of feet, each lead being frictionally pressed by an individual spring-biased foot against said stationary surface to frictionally impede the advancement of each lead, each spring-biased foot providing a predetermined amount of pressure against said lead which is essentially invariant relative to variations in the lead diameter.

4,253,223

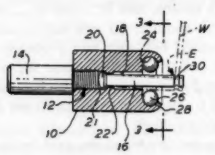
DEBURRING DEVICES

Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Filed Aug. 21, 1979, Ser. No. 68,485
Int. Cl.³ B21C *37/30*
U.S. Cl. 29—90 R **6 Claims**

1. A deburring device comprising a generally cylindrical, rotatable housing formed with a coaxial bore therein; a generally cylindrical peening tool disposed in said bore with a portion of said tool protruding beyond an end extremity of said housing, said protruding portion being formed with a continuous, encircling peening groove; and a circular, uninterrupted series of projections in said housing in loosely surrounding relation to said peening tool; said loose relationship being such

that force applied, through a workpiece edge held in said groove, in a lateral direction while the edge is moved along in



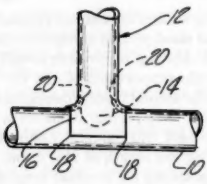
the groove, displaces the peening tool laterally into hammering engagement with a succession of the projections of said series.

4,253,224

FIXTURELESS METHOD OF MAKING TUBE JOINTS

Stephen L. Hickman, and Clifford E. Pifer, both of Adrian, Mich., assignors to Brazeway, Inc., Adrian, Mich.

Continuation of Ser. No. 805,591, Jun. 8, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,283
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—157 T **1 Claim**



1. A method of forming a tube joint between a circular-in-section body tube and a transversely intersecting branch tube, comprising the steps of:

(A) forming an opening in the side wall of said body tube, said forming step being performed by the substeps of—

(1) punching said opening along a line of action transverse to the length of said body tube and offset from the centerline of said body tube, said punching step resulting in the formation of cusped portions along the edge of said opening aligned with the length of said body tube,

(2) forcing said cusped portions outwardly from said side wall of said body tube, whereby said cusped portions are adapted to engage the inner diameter of said branch tube;

(B) reshaping an end section of said branch tube into a saddle shape adapted to grip said body tube, said re-shaping step being performed by the substeps of—

(1) cutting first and second slots in diametrically opposed sides of said branch tube,

(2) forming first and second segments defined by said slots into respectively corresponding opposing arcuate shapes about an axis, said segment being adapted to partially encircle at least one half of the circumference of said body tube;

(C) positioning said end section of said branch tube over said opening in said main tube in gripping engagement with said side wall of said body tube and with said cusped portions engaging the inner diameter of said branch tube; and

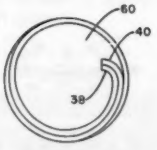
(D) joining said end section of said branch tube and said side wall of said body tube.

4,253,225

METHOD OF MANUFACTURING A HEAT EXCHANGER ELEMENT

William E. Wright, East Syracuse, and Ross Moyer, Lafayette, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,723
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 R **2 Claims**



1. A method of manufacturing a heat transfer element for use in a heat exchanger wherein air or other fluid is moved in contact with tubes containing refrigerant comprising:

wrapping a plurality of tubes about a forming drum in a parallel abutting position to form a plurality of helically wound coils,

providing terminal leads at each end of said coils,

removing the wound coils from the forming drum,

bending said terminal leads toward the center longitudinal axis of said coils,

locating each terminal lead in a bent position inward of the next terminal lead at each end of said coils so that said terminal leads are positioned tangent to a plane which is perpendicular to the center longitudinal axis of said helical coils,

cutting off a desired portion of said terminal leads, and

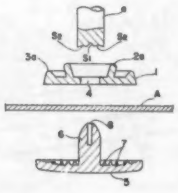
joining each end of said terminal leads to a header adapted to supply refrigerant to said heat transfer element.

4,253,226

METHOD FOR MOUNTING UP A PLASTIC FASTENER

Tadashi Takeda, 12-banchi, 1-chome, Kitakinomoto, Yao-shi, Osaka-fu, Japan

Filed Jul. 25, 1979, Ser. No. 60,518
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432.1 **3 Claims**



1. In a method for mounting on a supporting sheet piece a plastic snap fastener element comprised of a base with a central aperture and of a post having an axially outwardly open hollow-tipped stem adapted to pierce through the supporting piece and to extend through the aperture in the base, comprising the steps of placing the base in proper position on one side of the supporting piece, aligning the post therewith on the other side of the supporting piece, forcing the stem of the post to pierce through the supporting piece and to extend through the aperture in the base and causing substantial wall portions of the hollow stem portion to plastically deform radially outwardly to form a clamping closure head on the stem, THE IMPROVEMENT comprising in that the plastic deformation of the stem walls is made by applying axial pressure to the stem

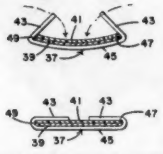
while exerting radially inwardly contracting force upon the open hollow tip brim of the stem.

4,253,227

STRAP SECURING METHOD

Robert E. Bullington, Bear, Del., assignor to Cyklop Strapping Corporation, Philadelphia, Pa.

Filed Nov. 26, 1979, Ser. No. 97,475
Int. Cl.[3] B23P *3/00, 25/00*
U.S. Cl. 29—458 **12 Claims**



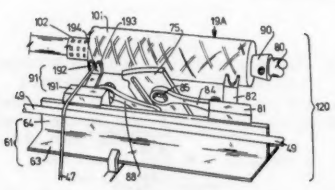
1. In a method wherein overlying portions of generally flat, non-metallic strap are secured by a metallic seal having a web and flanges, said method including the steps of applying forces to the seal web and flanges to fold the flanges at the seal corners onto overlying strap portions and to crimp the seal in a transverse direction thereof, the improvement comprising causing the overlying strap portions and the seal web to assume a similar bow away from the seal flanges under opposing component forces applied to the seal flanges to seat longitudinal edges of the overlying strap portions snugly within the seal corners, whereby such seated strap portions serve as fulcrums about which the seal flanges are folded during the continued application of the opposing component forces and are firmly interlocked with the seal during crimping.

4,253,228

APPARATUS AND SYSTEM FOR FORMING WOUND FILTERS

William G. Easley, Amarillo, Tex., assignor to Filterspun, Inc., Amarillo, Tex.

Filed Sep. 14, 1978, Ser. No. 942,282
Int. Cl.[3] B01D *39/08*
U.S. Cl. 29—564.1 **8 Claims**



1. A system for producing and controlling the quality of wound filters said system comprising in operative combination, an apparatus for forming a filter tube and comprising a frame, a filter tube support means supported by a first shaft, a rotatable mounting means for said shaft, and a drive means attached to said first shaft,

yarn guide support means extending and having a straight path of travel parallel to said first shaft, and

a cam attached to a second shaft and drive means attached to said second shaft, said mounting means and said yarn guide means and said drive means supported on said frame, a cam arm attached to said cam,

said yarn guide means movably supported on said yarn guide support means, said yarn guide means movable along a straight path parallel to but spaced away from said first shaft, and also comprising a yarn guide adjustment assembly comprising, in operative connection, a link assembly means located between said cam arm and said yarn guide means and operatively connected to said cam arm and to said yarn guide means, said link assembly means comprising an input link and a crank arm and an output link, said output link located between and pivotally connected to said crank arm and to said yarn guide support means, said input link located between and pivotally connected to said crank arm and to said cam arm, said cam arm extending parallel to said first shaft,

a first pivotal connection between said input link and said crank arm and a second pivotal connection between said output link and said crank arm, a third pivotal connection between said input link and said cam arm, and a fourth pivotal connection between said output link and said yarn guide support means, said crank arm pivotally supported on said frame at a fifth pivotal connection, whereby said first pivotal connection moves in a first curved path which extends in the direction of the length of said straight path and said second pivotal connection moves in a second curved path different than said first curved path and which second curved path extends in the direction of the length of said first straight path, said third pivotal connection having a different length of travel and a different rate of speed and a different rate of acceleration and deacceleration than said fourth pivotal connection as measured parallel to the straight path of travel of said yarn guide means,

said cam having an axis of rotation coaxial with said second shaft and said third pivotal connection between said input link and said cam arm is movable parallel to the length of said yarn guide support means and the first pivotal connection and the second pivotal connection are both sapced away from the fifth pivotal connection at distances that extend from said fifth pivotal connection in the same direction along the length of said crank arm, and

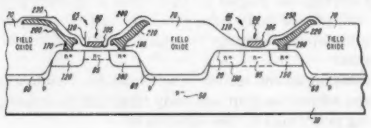
an apparatus for testing the pressure drop across the finished filter tube at a given rate of fluid flow through said tube and means for measuring the diameter of product winding apparatus.

4,253,229

SELF-ALIGNED NARROW GATE MESFET PROCESS

Keming Yeh, Westchester, and James L. Reuter, Rancho Palos Verdes, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1978, Ser. No. 900,635
Int. Cl.[3] B01J *17/00*
U.S. Cl. 29—571 **16 Claims**



1. A method of making a narrow gate MESFET comprising the steps of:

a. preparing a layered mask of nitride and polysilicon on a substrate over a channel region therein;

b. oxidizing a predetermined amount of the polysilicon layer on both sides of said layered mask;

c. removing the oxidized polysilicon of said layered mask for allowing the polysilicon layer of said layered mask that remains to be relatively predeterminably narrower than the nitride layer;

d. etching the nitride layer of said layered mask to be disposed only under the polysilicon layer of said layered mask thereby defining the gate region;

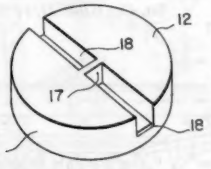
e. oxidizing the surface of the substrate to form an oxide layer of predetermined thickness;
f. removing the nitride layer of said layered mask; and
g. depositing of metal on the gate region to form the MESFET gate.

4,253,230

SILICON BARRIER JOSEPHSON JUNCTION CONFIGURATION

Kenneth L. Davis, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1979, Ser. No. 10,859
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—580 **19 Claims**



1. A method of forming a planar, silicon barrier, Josephson junction comprising:
fabricating from a silicon bulk material a single crystal of silicon having a (110)-cut surface;
growing or depositing a protective layer on the (110)-cut surface of said silicon wafer;
forming an etch pattern in said protective layer to expose a portion of the surface of said silicon wafer;
etching away the exposed silicon defined by said pattern to a desired depth thereby forming a channel on opposite sides of a silicon barrier said channel having smooth straight side surfaces with a smooth bottom of exposed silicon in the surface of said wafer;
oxidizing said exposed silicon surfaces to a desired thickness;
etching away all the oxidized areas thereby forming a narrow barrier of a desired thickness;
cleaning all oxide off the silicon barrier surfaces;
depositing a layer of superconducting film on the bottom of said channel and on top of said wafer surface;
forming an etch pattern on said superconducting layer to remove the superconductor film from the top of said wafer surface thereby completing the formation of said Josephson junction.

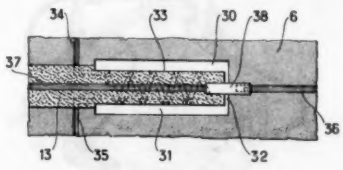
4,253,231

METHOD OF MAKING AN INDUCTIVE CIRCUIT INCORPORATED IN A PLANAR CIRCUIT SUPPORT MEMBER

Christian Nouet, Ste. Genevieve des Bois, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jan. 11, 1978, Ser. No. 868,581
Claims priority, application France, Jan. 13, 1977, 77 00852; Jan. 17, 1977, 77 01249; Feb. 15, 1977, 77 04189
Int. Cl.³ H01F *41/14, 41/04*
U.S. Cl. 29—602 R **2 Claims**

1. A method of manufacturing an inductive circuit which is incorporated in a planar support member for supporting an electric circuit, said method comprising the steps of:
providing a planar metallic support member which includes at least a portion having magnetic material extending through at least a part of its thickness, said magnetic material and said support member having a configuration which forms a magnetic circuit including a magnetic core region with at least one opening adjacent to the magnetic core region;
coating at least the core region with a layer of insulative material;
forming conductor paths on both faces of said support member for interconnecting different components of an electric circuit to be supported by said support member, said conductor paths including a winding extending around said magnetic core region, said winding being electrically insulated from the magnetic material by the layer of insulative material, and interconnecting the portions of the winding which are located on opposite faces of the magnetic core via said opening;



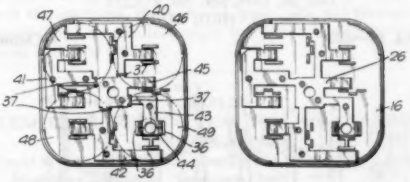
forming said magnetic core region in the form of a strip lying between two slots and interconnecting the two slots by a third slot so that the magnetic core region takes the form of a tongue surrounded on three sides by a single opening; and
plastically deforming the tongue to adopt a position lying outside the plane of the magnetic circuit when unstressed to form the armature of a relay such that the tongue returns to said plane when magnetic flux flows through the magnetic circuit.

4,253,232

METHOD OF MANUFACTURING AN ELECTRIC BATTERY

Brian S. Bennett, Barnet; Bruce A. A. Gray, Takeley, Near Bishops Stortford, and Michael A. Todd, Welling, all of England, assignors to Berec Group Limited, London, England

Filed Feb. 26, 1979, Ser. No. 15,142
Int. Cl.³ H01M *2/24*
U.S. Cl. 29—623.1 **4 Claims**



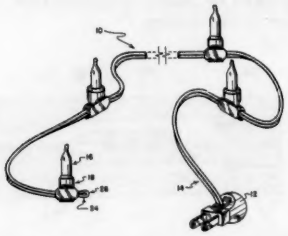
1. A method of manufacturing a plurality of internal connections for an electric battery having a casing with a plurality of cell compartments for housing individual cells, which method comprises forming on a single unitary conducting member a plurality of internal connections having contact members for abutment with said cells so as to form electrical contact therewith, securing the unitary conducting member to part of the battery casing so that the contact members lie in predetermined positions relative to the cell compartments, and severing in situ in the casing the unitary conducting member into a plurality of separate internal connections by stamping through the unitary conducting member and simultaneously piercing through part of the battery casing.

4,253,233

RAPIDLY FORMED ELECTRICAL CONNECTION

Steven N. Lovrekovic, Cleveland, and Harry J. Bowers, Jr., Mayfield Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 4, 1979, Ser. No. 35,932
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **22 Claims**



1. A method of connecting in electrical communication an electrically conductive member to an electrical conductor, the conductor being surrounded by a thermoplastic, electrically insulative material, comprising the steps of:

(a) placing the conductive member adjacent to an electrically insulative backing member;

(b) placing the conductor adjacent to the conductive member;

(c) melting a portion of the surrounding insulative material of said conductor;

(d) driving the conductive member and the conductor into engagement with each other, the melting of the surrounding insulative material being sufficient to permit such engagement to occur; and

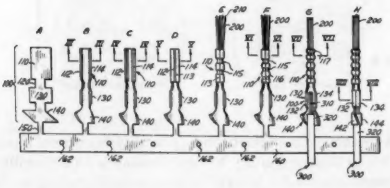
(e) solidifying the melted portions of the insulative material, whereby the backing member, the conductive member, and the conductor are secured in an integral, electrically conductive assembly.

4,253,234

METHOD OF MAKING ELECTRICAL CONTACT

Paul D. Niles, Bainbridge, and Richard W. Normann, Otego, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 910,975, May 30, 1978. This application Dec. 26, 1978, Ser. No. 973,272
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—882 **8 Claims**



1. A method of making a hermophroditic electrical contact comprising the steps of:

stamping a contact body as a single flat piece of electrically conducting stock having uniform thickness and including forward and rear portions, said stamping of the forward portion including stamping the forward portion into a generally rectangular portion having interfitting side edges;

forming the forward portion of the contact body into a generally cylindrically-shaped socket by progressively bending the edges around to a position where the interfitting edges form a seam;

inserting a plurality of fine parallel contact wires into the forward socket of the contact body; and

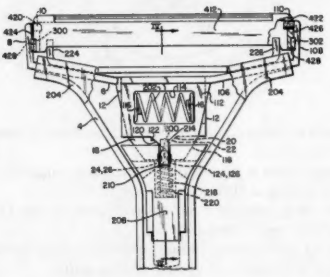
crimping the foward portion of the contact body at a first location near the rear end thereof to retain the wires therein and at a second location longitudinally forward of the first location, said crimping at a plurality of spaced locations for axially aligning said contact wires with each other and the socket.

4,253,235

SHAVING SYSTEM

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 19, 1979, Ser. No. 49,923
Int. Cl.³ B26B *21/14*
U.S. Cl. 30—47 **8 Claims**



1. A shaving system comprising a razor handle and a replaceable blade assembly, said handle comprising a grip portion and a head portion, said head portion having first and second arms extending therefrom, first and second pivot mounting means disposed respectively on said first and second arms, said pivot mounting means defining a pivot axis transverse to said grip portion, button means disposed on said head portion, and means interconnecting said button means and said arms whereby manual manipulation of said button means is operative to move said arms apart from each other in such manner as to cause said pivot mounting means to move away from each other along said axis, spring means biasing said arms toward each other, and cam means disposed on each of said arms, said cam means extending inwardly of said arms toward each other, and a blade assembly comprising a housing, blade means fixed to said housing, first and second pivot mounting means disposed in said housing for receiving respectively said first and second pivot mounting means of said arms for pivotal mounting of said blade assembly on said handle, and cam means disposed in said housing for complemental engagement with said handle cam means, said blade assembly cam means and said handle cam means cooperating to urge said blade assembly to a neutral position.

4,253,236

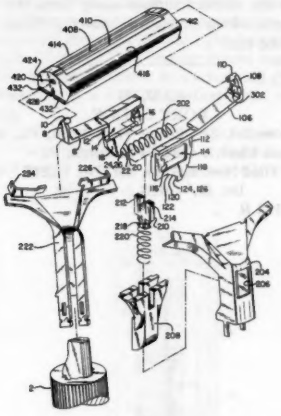
RAZOR BLADE ASSEMBLY

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 19, 1979, Ser. No. 49,919
Int. Cl.³ B26B *21/06*
U.S. Cl. 30—47 **3 Claims**

1. A razor blade assembly comprising a housing having a guard portion and a cap portion, blade means permanently fixed to said housing, cutting edge portions of said blade means being disposed in an opening between said guard portion and said cap portion, said housing having pivot mounting means therein for receiving complementary pivot mounting means of

a razor handle, said housing pivot mounting means forming a pivot axis for pivotal movement of the blade assembly thereabout during a shaving operation, and cam means disposed on said housing at an end thereof, said cam means comprising a



generally V-shaped outwardly-facing recess on said end of said blade assembly housing and being adapted for engagement with biasing means of said razor handle when said blade assembly is mounted on said handle, said recess being removed from but proximate one of said pivot mounting means.

4,253,237

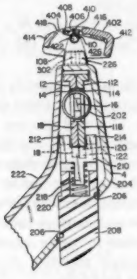
RAZOR HANDLE

Chester F. Jacobson, Southboro, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 19, 1979, Ser. No. 49,920

Int. Cl.³ B26B *21/52*

U.S. Cl. 30—89 **4 Claims**



1. A razor handle for a razor blade assembly adapted to be pivotally mounted on the handle, said handle comprising first and second arm portions, first and second pivot mounting means respectively disposed on said first and second arm portions and adapted to engage complementary pivot mounting means on said blade assembly to effect said pivotal mounting, and first and second cam means disposed respectively on said first and second arm portions and engageable with complementary cam means on said blade assembly, said first and second cam means each being removed from but proximate one of said arm portion pivot mounting means, said first and second cam means extending inwardly from said arm portions in opposed fashion, each of said first and second cam means being generally V-shaped, said cam means cooperating to urge said pivotally mounted blade assembly toward a neutral position.

4,253,238

FILAMENT TYPE TRIMMER

John D. Sheldon, Charlotte, N.C., assignor to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 929,036, Jul. 28, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 110,896

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **10 Claims**

1. In a filament type trimmer, the combination of a rotatable housing having a rim portion, means for driving said housing in a selected direction of rotation, a filament storage spool rotatably mounted in said housing, a filament wound on said spool, exit means in said rim portion of the housing through which said filament extends in passing from said spool to the exterior of the housing, an end portion of said filament extending beyond said housing rim portion and constituting a cutting means of said trimmer, said exit means comprising a bushing having an aperture through which said filament extends, a flexible guide tube which wraps at least partially around said filament wound on said storage spool and extends tangentially to said bushing, said filament passing through said guide tube in going from said storage spool to said exit means, said aperture in said bushing having a central axis which is approximately aligned with an adjacent portion of said guide tube and having a smoothly curved front bearing surface, whereby said extending end portion of the filament when running free extends approximately radially from said housing so that said filament bears on and bends around said curved front bearing surface of said aperture, and when said extending end portion of the filament strikes an abstacle, it is deflected rearwardly relative to the housing so that said filament extends tangentially from said storage spool, through said guide tube and through said aperture in a substantial straight line free of flexing by engagement with said bushing.

4,253,239

LENGTH PROBE WITH TRACING UNIT AND SWITCH ARRANGEMENT

David J. Houck, Baltimore County, Md., assignor to Electronic Modules Corporation, Timonium, Md.

Filed Aug. 2, 1979, Ser. No. 62,941

Int. Cl.³ G01B *3/12*

U.S. Cl. 33—141 R **23 Claims**

1. A portable hand-held combination length probe, tracing unit, and switch arrangement comprising

a length probe unit and a tracing unit secured together as a single portable hand-held probe and tracing unit,

switch means carried by one of said length probe unit and tracing unit,

said tracing unit having a longitudinally slidable body,

spring means resiliently biasing said tracing unit body toward a first position, and permitting movement of said body against said spring to a second position,

said slidable tracing unit body having switch actuator means

for actuating said switch means, as a function of said tracing unit being moved from one of said positions to the other,

cam means on said slidable tracing unit for effecting actuation of said switch means through movement of said actuator as a function of movement of said slidable tracing unit,

and an intermediate bendable spring lever arm disposed between said cam means and said switch actuator for movement of said actuator by engagement of said cam with said spring lever arm.

4,253,240

MEASUREMENT APPARATUS FOR INTERRUPTED SURFACES

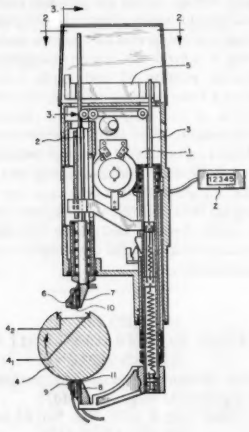
Kurt Feichtinger, Katzwalchen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 75,137

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841057

Int. Cl.[3] **G01B** *7/28, 5/20*

U.S. Cl. 33—172 E **15 Claims**



1. In an apparatus for measuring a workpiece, said apparatus including a measuring rod having a contact surface and means for blocking the movement of the rod, the improvement comprising:

proximity sensing means mounted on the measuring rod adjacent the contact surface, said sensing means generating a signal indicative of an interruption in the surface of a workpiece being measured, said blocking means responsive to said signal such that movement of the rod is blocked by the blocking means when the measuring rod is positioned adjacent a surface interruption;

a brake shoe, included in the blocking means, mounted to a mounting element, said brake shoe moveable between a first position, in which the shoe blocks movement of the rod, and a second position, in which the shoe allows movement of the rod; and

means, included in the blocking means, for moving the rod to move the contact surface away from the workpiece when the blocking means is activated to block the movement of the rod.

4,253,241

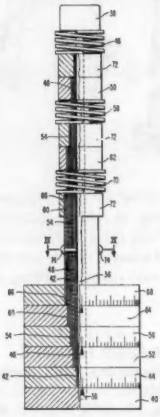
BORE GAUGE

William F. Nanstiel, Jr., Forest Hills Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,868

Int. Cl.[3] **G01B** *3/46, 5/08*

U.S. Cl. 33—178 R **6 Claims**



1. A bore gauge for measuring the internal diameter of a tube comprising:

a cylindrical first member;

a cap mounted on one end of said first member;

an indicator member mounted on the other end of said first member;

a cylindrical second member rotatably disposed around said first member and terminating short of said cap;

a recording member attached to one end of said second member and disposed adjacent said indicator member; and

a helically wound spring member disposed around said first member and attached at one end to said cap and at the other end to said second member for contacting the inside surface of said tube and causing said second member and said recording member to rotate relative to said first member and said indicator member thereby indicating the internal diameter of said tube.

4,253,242

DIGITAL ANGLE INDICATOR

Terrance M. McInerney, P.O. Box 98201, Atlanta, Ga. 30359

Continuation of Ser. No. 951,151, Oct. 13, 1978, abandoned. This application Jun. 26, 1980, Ser. No. 163,356

Int. Cl.[3] **G01C** *9/06*

U.S. Cl. 33—366 **11 Claims**

7. Ditigal angle indicator apparatus comprising:

a housing;

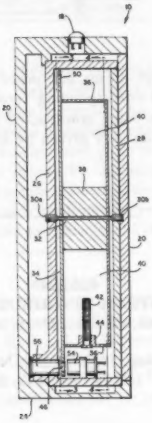
a disc freely rotatably mounted about an axis in said housing;

a first light transmissive area disposed on said disc and spaced radially from said axis, said first light transmissive area being defined by an arcuate opening in said disc;

a pair of light emitter means disposed to direct light toward said gravity responsive means;

a pair of light detecting means carried by said housing for detecting light from said light emitter means which is transmitted by said light transmissive areas, said light emitter means being circumferentially spaced from each other a distance equal to or less than the arc length of said opening such that both of said light detecting means detect light from said light emitter means transmitted from said first light transmissive area when said gravity responsive means is in a first orientation with respect to said housing;

a second light transmissive area disposed on said disc and spaced radially from said axis a distance equal to the distance which said first light transmissive area is spaced



from said axis, said second light transmissive area being angularly spaced from said first light transmissive area such that said disc blocks light from both of said light detecting means when said gravity responsive means is in a second orientation with respect to said housing and such that both of said light detecting means detect light from said light emitter means transmitted from said second light transmissive area when said gravity responsive means is in a third orientation with respect to said housing; and

indicator means operatively associated with said light detecting means to provide a first indication in response to an illumination condition of both of said light detecting means, to provide a second indication in response to the illumination of neither light detecting means, and to provide at least one other indication denoting an illumination of only one of said light detecting means.

4,253,243

PROCESS AND APPARATUS FOR MOISTURE CONDITIONING SEED COTTON AND LIKE MATERIALS

Paul L. Whelan, 5708 Marina Dr., Garland, Tex. 75043

Filed Jul. 23, 1979, Ser. No. 59,536

Int. Cl.³ F26B *21/10*

U.S. Cl. 34—31 **6 Claims**

1. In a process of drying seed cotton to a desired range of moisture content which includes the steps of:

a. passing the cotton along a treatment path and into operative relationship with a first moisture sensing means,

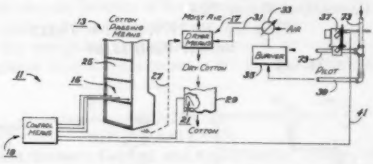
b. subsequently passing the cotton through a drying system,

c. subsequently passing the cotton into operative relationship with a second moisture sensing means located outside of the drying system, and

d. utilizing a combination of signals obtained from the sensing means set forth in a and c above to control the amount of moisture removed from the cotton while in the drying system;

the improvement comprising:

e. employing a plurality of said first moisture sensing means disposed at different respective locations across said treatment path so as to sense the moisture content of said cotton at said plurality of locations; said plurality of first moisture sensing means being connected in discrete, parallel circuits and so connected that only the first moisture sensing means measuring an indication of least moisture content will be employed as a control signal, and



f. utilizing the signal from only the first moisture sensing means measuring the least moisture content in combination with the signal from the second moisture sensing means to control the amount of moisture removed from the cotton.

4,253,244

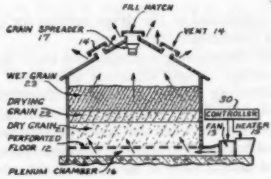
ELECTRONIC CONTROL SYSTEM FOR LOW TEMPERATURE GRAIN DRYING

Glenn A. Kranzler, Pullman, Wash., assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 25, 1979, Ser. No. 51,411

Int. Cl.³ F26B *21/10, 21/12*

U.S. Cl. 34—48 **43 Claims**



1. In a low-temperature grain conditioning system including a grain storage bin, and a fan operable to draw air into the storage bin and force the air through the grain, a controller for controlling the operation of the fan, said controller comprising: initializing means including initialization circuit means responsive to a set of input signals representing initial conditions to provide a plurality of control outputs, dry down indicating means responsive to a first one of said control outputs to indicate an unsuccessful drying operation whenever the set of input signals corresponds to initial conditions for which the probability of successful drying of the grain is less than a preselected value, and to indicate when completion of drying of the grain can be expected whenever the set of input signals corresponds to initial conditions for which the probability of successful drying of the grain is equal to or greater than said preselected value; fan control means including fan enable circuit means normally operable to effect continuous operation of said fan, said fan control means including condition responsive circuit means enabled by a second one of said control outputs to respond to condition sensing means and generate a signal for disabling said fan enable circuit means to interrupt the operation of said fan whenever a predetermined condition is sensed; and aeration circuit means operable when enabled to control said fan enable circuit means to provide intermittent

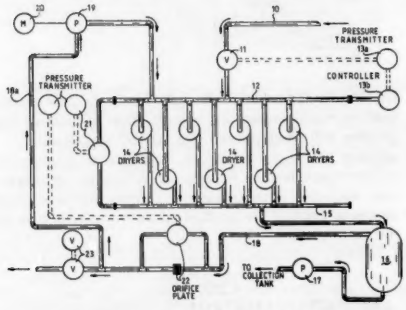
operation of the fan, said condition responsive circuit means being ineffective in disabling said fan enable circuit means when it is operating under the control of said aeration circuit means.

4,253,245

DEVICE FOR CONTROLLING THE FLOW OF STEAM IN PAPER MACHINE DRYERS

Robert D. Perrault, Titusville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sep. 19, 1979, Ser. No. 77,122
Int. Cl.[3] F26B *13/08*
U.S. Cl. 34—48 **5 Claims**



1. In a dryer and drainage system including at least one dryer section, each section having at least one dryer drum, a device for controlling the flow of steam through each section comprising:

means for feeding steam into the dryer section;

a device for controlling the pressure of steam into the dryer section;

a separator connected to the dryer section for drawing off steam and condensate therefrom;

said separator maintaining a condensate level therein;

a pipe connected to said separator above the condensate level for drawing off blowthru steam therefrom; and

a gas pump to which the said pipe is connected, said pump being positioned between the said separator and the dryer section and being set to a predetermined speed to control the desired rate of flow of steam from the said separator into the dryer section;

whereby the required pressure differential for all conditions is automatically controlled.

4,253,246

INSTALLATIONS FOR THE TREATMENT OF STRIP MATERIAL IN A GASEOUS MEDIUM

Paul Marchal, Garches, France, assignor to Air Industrie, Garches, France

Filed Jul. 26, 1979, Ser. No. 60,763
Claims priority, application France, Aug. 1, 1978, 78 22742
Int. Cl.[3] F26B *13/08*
U.S. Cl. 34—121 **9 Claims**

1. Installation for the treatment in a gaseous medium, notably for heat treatment, of a strip material comprising:

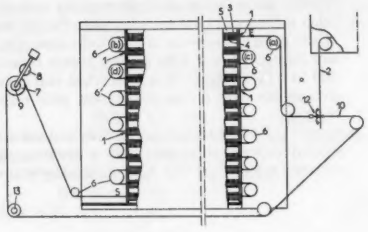
(a) a plurality of treatment zones in which the strip material is supported by an aerodynamic effect;

(b) a plurality of return rollers over which the strip material passes;

(c) at least one endless belt driving the strip during its introduction into the installation, this endless belt being set in motion by drive means;

(d) as many drive pulleys as there are return rollers, these drive pulleys having the same initial diameter as the return rollers, said endless belt passing over said drive pulleys;

(e) free wheel means interposed between each drive pulley and the corresponding return roller so that each return roller can rotate faster than the corresponding drive pulley; and



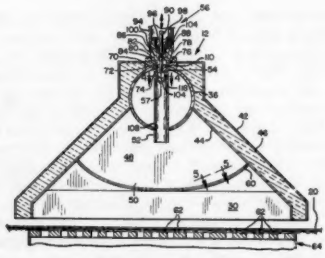
(f) sliding coupler means interposed between each driver pulley and its corresponding return roller, said sliding coupler means being constructed such that each return roller is progressively driven by its corresponding drive pulley.

4,253,247

STEAM DISTRIBUTOR

William E. Bergstrom, Portland, Oreg., assignor to Eppco, Inc., Portland, Oreg.

Filed Aug. 24, 1979, Ser. No. 69,293
Int. Cl.[3] F26B *13/10*
U.S. Cl. 34—155 **4 Claims**



1. In a hot gas distributor for feeding a hot gas into a chamber from a source of said gas, the combination comprising:

a pipe in said chamber for conveying a hot gas from a source thereof,

a nozzle tube extending transversely through said pipe,

said tube having an inlet port in the wall thereof within said pipe to provide communication between the interior of said tube and said pipe,

means mounting said tube at one end thereof to said pipe in gas tight engagement therewith, the other end of said tube opening into said chamber,

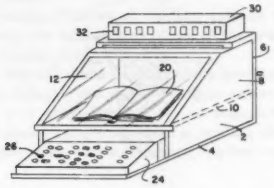
a valve plug slidably mounted in said tube for movement between a first, valve closing, position between said inlet port and said other end of said tube and a second, valve open, position between said inlet port and said one end of said tube,

and a valve actuator mounted exteriorly of said pipe and operatively connected to said valve plug through said tube one end for effecting movement of said valve plug between said positions.

4,253,248
TEACHING MACHINE APPARATUS

Judson E. Cornish, Box 256, LaJolla, Calif. 92038

Filed Apr. 16, 1979, Ser. No. 30,575
Int. Cl.[3] G09B 5/02
U.S. Cl. 434—227 11 Claims

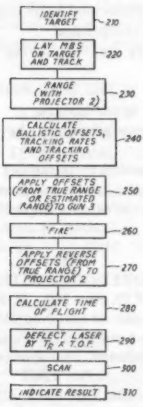


1. Teaching machine apparatus comprising means for supporting printed matter, means for hiding and disclosing the printed matter to a student comprising a variably transparent viewing means comprising a plate liftable and slidable between parallel supports for holding said plate in a lifted position, student response input means for inputting response to the printed matter, control means connected to the response means and to the disclosing means for disclosing printed matter on the support means according to operation of the response means.

4,253,249
WEAPON TRAINING SYSTEMS

David W. Ashford, Farnborough; William B. Davies, Hook, and Sydney S. Hartley, Bath, all of England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed Sep. 7, 1979, Ser. No. 73,418
Claims priority, application United Kingdom, Sep. 13, 1978, 36657/78
Int. Cl.[3] F41G 3/26
U.S. Cl. 434—22 6 Claims



1. A weapon training system for assessing the accuracy of aim of a weapon at a target, when there is relative movement between the weapon and the target and the target is tracked for a period to measure its rate of motion relative to the weapon, comprising:

source means associated with the weapon to provide a beam of electromagnetic radiation;

detector means for detecting when the beam is incident on the target;

means for deriving a signal indicative of the range of the target from the transit time of electromagnetic radiation between the source means and the detector means;

means for calculating from the range signal the time of flight of ammunition that would be fired by the weapon;

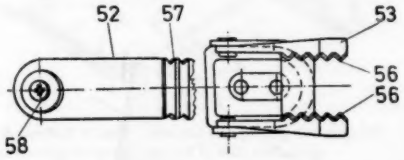
steering means responsive to signals indicative of weapon offsets derived from the range signal and the measured rate of motion of the target and arranged to move the direction of the beam such that, at the end of the calculated time of flight, the beam direction has been subjected to a net deflection by an amount equal and opposite to said offsets plus the product of the measured rate of motion of the target and the calculated time of flight; and

means for energising said source means at the end of the calculated time of flight to assess the accuracy of aim.

4,253,250
SHOE FASTENER

Erwin Weigl, Brunn a. Gebirge, and Axel Kubelka, Vienna, both of Austria, assignors to Polyair Produkt Design Gesellschaft m.b.H., Kittsee, Austria

Filed Dec. 8, 1978, Ser. No. 967,874
Claims priority, application Austria, Dec. 19, 1977, 9093/77
Int. Cl.[3] A43B 11/00; F16G 11/00
U.S. Cl. 36—50 7 Claims



1. A shoe fastener, particularly for skiing boots, comprising a tightening member, which acts on a tension element, and means for fixing the tension element and for selecting the effective length thereof, characterized in that the tension element consists of a flexible strap which is substantially trapezoidal in cross-section and has teeth on its longitudinal sides and further in that the device for fixing the tension element comprises a groove, which tapers toward its bottom with the width of the tension element exceeding the width of the groove at its bottom, and the groove extends in the longitudinal direction of the tension element and is defined by side faces, at least one of which is formed with ribs, each of which at least at its end near the bottom of the groove extends transversely to the longitudinal axis of the groove and each rib and the pulling direction of the tension element inserted in the groove include an angle which is open toward the open side of the groove and exceeds 90°, the ribs further having side faces which are steeper on the side that faces opposite to the pulling direction than on the side which faces in the pulling direction.

4,253,251
METHOD FOR MANUFACTURING A SKI BOOT

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Jun. 6, 1977, Ser. No. 803,972
Claims priority, application France, Jun. 11, 1976, 76 17821
Int. Cl.[3] A43B 5/04
U.S. Cl. 36—119 13 Claims

1. A ski boot comprising

(a) a rigid shell;

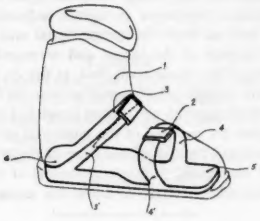
(b) a foot-retaining system located entirely within said shell, comprising

(i) a base;

(ii) at least one strap attachment means assembled to said base and partially surrounding the foot to be retained;

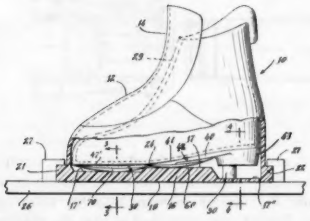
(iii) means for tensioning said strap attachment means on

the foot, said tensioning means being accessible from the outside of said shell; and



(iv) means for assembling said base to the lower portion of the interior of said shell.

4,253,252
SKI BOOT
Joel H. Eisenberg, 53A Blackhawk La., Stratford, Conn. 06497
Filed Mar. 14, 1979, Ser. No. 20,512
Int. Cl.³ A43B *5/04, 7/14, 13/18*
U.S. Cl. 36—120 **41 Claims**



1. A ski boot for mounting on a foot of a skier, said ski boot comprising an outer boot having a substantially inflexible upper shell and a hole having an inside base; an insert disposed within said outer boot on said inside base in such a manner that it is capable of being laterally tiltable with respect to said outer boot upon inversion or eversion of the foot; and means for attaching said ski booth to a ski; said insert comprising a generally plate-like footbed for supporting the foot of a skier, said footbed being configured and made of a flexible material so as to form and hold the skier's foot in a functional cavus position when the foot is placed thereon; said insert having a rear heel area balance means disposed at a lower surface at one end and a front toe area balance means disposed at said lower surface opposite said rear balance means, both of said balance means contacting said inside base when said insert is operatively in place, whereby in operation, upon a relatively minor eversion of the skier's foot, said insert tilts and applies pressure on the inboard edge of the ski to which said boot is attached.

4,253,253
ORNAMENTAL SHOE HEEL DEVICE
Arnold J. McCormick, 2455 Oakwood Manor Dr., Florissant, Mo. 63031
Filed May 29, 1979, Ser. No. 43,458
Int. Cl.³ A43B *23/00*
U.S. Cl. 36—137 **3 Claims**

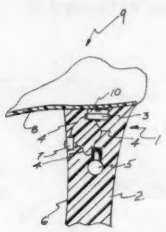
1. An ornamental shoe heel for use with a conventional shoe body which is provided with a heel said heel provided with a battery chamber disposed proximate the top of said heel comprising,

light means operably mounted in said heel, said heel being constructed of partially transparent material,

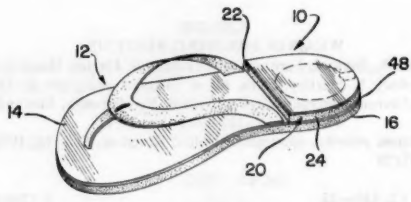
electrical conductors operably coupled to said light means,

battery means operably coupled to said electrical conductors, said battery means mounted in said battery chamber,

chamber closure means removably mounted in said battery chamber and providing an interface between said battery chamber and the top of said heel.



4,253,254
SOUND-PRODUCING DEVICE
Courtland P. Gill, 937D N. Placentia, Fullerton, Calif. 92631
Filed Jan. 31, 1980, Ser. No. 117,528
Int. Cl.³ A43B *23/00*
U.S. Cl. 36—139 **6 Claims**



1. A sound-producing device adapted to be secured to at least one shoe and positioned to be engaged by the heel of the wearer, the device comprising:

a soft pliable body member having an upper and a bottom surface;

a recess formed in said body member, with the opening thereof in said upper surface;

a noisemaker means adapted to be received in said recess; and

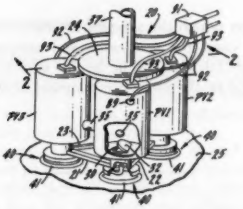
a cover wall mounted to the upper surface to enclose said noisemaker means in said body, wherein said noisemaker is activated by the wearer thereof.

4,253,255
AUTOMATED DREDGING WITH VACUUM ASSIST
William E. Durell, P.O. Box 250 - R. 5, Antioch, Ill. 60002
Continuation-in-part of Ser. No. 835,333, Sep. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 632,294, Nov. 17, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,822
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—62 **6 Claims**

1. A pressure displacement dredging system operable over a wide depth range under varying bottom conditions, comprising:

a submersible dredging head including a plurality of at least three pressure vessels, each vessel having a material intake port and a material discharge port, each material port including a check valve, and each vessel having an operating fluid inlet port and an operating fluid exhaust port, the material discharge ports of all of the vessels being connected to a common material discharge conduit;

a corresponding plurality of low level sensors, one in each pressure vessel;
a source of operating fluid, under pressure;
an inlet valve for each pressure vessel, connecting the inlet port of the vessel to the operating fluid source;
an exhaust valve for the exhaust port of each pressure vessel;
a vacuum pump;
a corresponding plurality of vacuum exhaust valves, each connecting the exhaust port of one of the pressure vessels to the vacuum pump;
and cycle control means coupled to the level sensors and to the inlet, exhaust, and vacuum exhaust valves of all of the vessels in a predetermined closed sequence, the cycle control means being responsive to sensing of the absence of material at the low level sensor in a first vessel to open



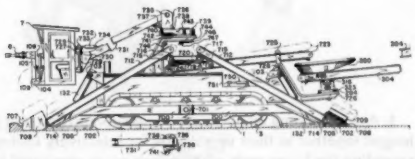
the inlet valve for the next vessel in the sequence and initiate pressure displacement discharge of material therefrom with no appreciable time delay, and thereafter close the inlet valve and open the exhaust valve of the first vessel to initiate filling of the first vessel by pressure displacement with no appreciable time delay;
the cycle control means further including vacuum changeover means for closing the exhaust valve and opening the vacuum exhaust valve of each pressure vessel during its filling phase to accelerate and complete filling of the vessel when dredging in shallow depths;
the operating sequence being such that each pressure vessel is full when the material in the preceding vessel in the sequence has discharged to the level of its low level sensor.

4,253,256

SELF-LOADING DUALISTIC EARTH EXCAVATOR WITH CONNECTING TELESCOPIC CONVEYING AND DUALISTIC DISTRIBUTION MEANS

Jack M. Feliz, 2110 Southridge Dr., Palm Springs, Calif. 92262

Division of Ser. No. 912,042, Jun. 2, 1978, Pat. No. 4,167,826.
This application May 14, 1979, Ser. No. 38,808
Int. Cl.³ E02F *5/22;* **E01C** *19/06*
U.S. Cl. 37—104 **4 Claims**



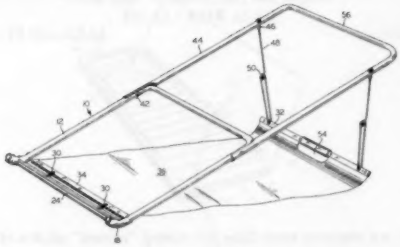
1. In a multi-function distribution vehicle, the combination of:
(a) a telescopic conveyor pivotally mounted to a double apertured hopper;
(b) said hopper being secured to a horizontally disposed reversible conveyor for discharging earth fill on each end of said vehicle while traveling in a forward or rearward direction;
(c) a pair of sprinkling pipes mounted on the ends of said conveyor for wetting the said earth fill;
(d) a pair of sprinkler nozzles secured to said vehicle for wetting the adjacent earth fill areas;
(e) a pair of bulldozer blades mounted to the ends of said vehicle for spreading the earth fill;
(f) a pair of front and rear impactor wheels for supporting said vehicle and impacting the earth fill while travelling in a forward or rearward direction.

4,253,257

SNOW REMOVAL DEVICE AND METHOD OF USING IT

Donald F. Albert, Morris Hubbard Rd., Higganum, Conn. 06441

Filed Jul. 23, 1979, Ser. No. 59,693
Int. Cl.³ E01H *5/02*
U.S. Cl. 37—195 **19 Claims**



1. A method of snow removal comprising the steps of:
a. providing a snow-removal device including:
(i) a frame having a blade end providing a leading edge adapted to be propelled into an accumulation of snow and having a handle end opposite said blade end for propelling said leading edge into the snow;
(ii) an elongated flexible sheet member having first and second opposite ends and lateral edges extending between said ends and consisting essentially of a synthetic resin that maintains flexibility at temperatures at least as low as 0° C.;
(iii) first sheet attachment means providing an attachment to said frame for said elongated sheet at said blade end in position to receive snow thereon when said leading edge of said frame is propelled into an accumulation of snow; and
(iv) second sheet attachment means providing an attachment for said second end of said flexible sheet member to said frame toward said handle end thereof to provide support of said second end of said sheet member by said frame, said sheet member and said first and second attachment means therefor being of sufficient length to permit slack in said sheet member, said sheet member being freely movable relative to said frame intermediate said attachment means and flexible enough to permit said sheet member with a load of snow thereon to assume a generally V-shaped form with one leg of the V resting on a generally horizontal surface when said blade end rests on the surface and said handle end is supported above the surface and to permit the vertex of the V to move forward along said sheet member as said handle end is raised so that the length of said leg resting on the generally horizontal surface is gradually reduced, whereby a load of snow resting on said sheet member is lifted only a portion at a time as said handle end is raised;
b. resting said blade end of said frame on a generally horizontal surface having snow thereon;
c. supporting said handle end of said frame above the horizontal surface;
d. propelling said blade end into an accumulation of snow on

said surface to load snow onto said sheet member, said sheet member assuming a generally V-shaped form;

e. moving said snow-removal device to another location; and

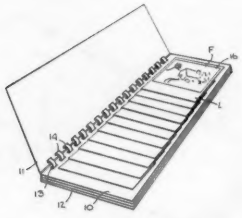
f. raising said handle end of said frame to move the vertex of the V forward along said sheet member and thereby remove the load of snow therefrom.

4,253,258

PHOTO ALBUM FOR INSTANT PHOTOS

Harold Engelstein, Far Rockaway, N.Y., assignor to NB Jackets Company, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,327
Int. Cl.³ G09F *1/10*
U.S. Cl. 40—158 R **3 Claims**



1. An album or book filler for storing "instant" photos of the type in which a positive film is held in a mat forming a frame therefor and having upper and lower margins, said photos all being of the same size and having predetermined rectangular end and side dimensions, said album or book comprising a set of like mounting boards, each having a length equal to said end dimension and a width much shorter than said side dimension, each board having a band of pressure-sensitive adhesive material extending across both the front and back faces thereof at corresponding positions, each band being protectively covered by a removable liner, whereby a first photo may be attached to the board by pressing the upper end rear portion thereof against the front face band and a second photo may be attached by pressing the upper end rear portion thereof against the back face band to provide a pair of photos in back-to-back relation, the board acting as a backing for said photos, the mounting boards in said set being hinged at equi-spaced positions onto a carrier card each by an adhesive tape, a portion of which is adhered to said board and the remaining portion to said card, the spacing between boards being such that the pairs of photos thereon overlap each other with only the lower margins exposed.

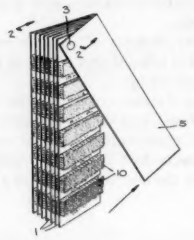
4,253,259

CARPET DISPLAY SYSTEM

Daniel I. Schaffer, and Carl R. Elsinger, both of New York, N.Y., assignors to Commercial Affiliates, Inc., New York, N.Y.

Filed Jun. 19, 1979, Ser. No. 50,079
Int. Cl.³ G09F *7/00*
U.S. Cl. 40—492 **4 Claims**

1. A sample display system comprising a plurality of display cards, pivot means for assembling the display cards together so that the display cards are pivotally mounted so as to be individually movable relative to each other, a plurality of carpet samples on one face of a display card and informational data on said display card relating to the specifications of said samples, said samples on a display card being related to each other, identifying data for each sample being located adjacent the samples, the specifications of said samples being on the reverse face of said display card, a cover card being provided for said display system, the samples being mounted on the front face of each display card and located one above the other in spaced relationship to each other, said cards being spaced thickness-wise from each other and being in superimposed relationship to each other, the samples on each display card having a predetermined thickness which substantially fills the space between the



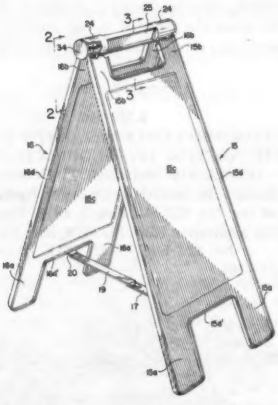
display card on which the samples are mounted and the next superimposed card, the said cards and samples substantially filling the entire thickness of the display system whereby there is no substantial thickness-wise movement between the cards.

4,253,260

SELF-STANDING FLOOR SIGN

Dale T. Maza, Stephenson; Glen E. Tomblin, Winchester, and Harold Ruckman, Stephenson, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Oct. 18, 1979, Ser. No. 85,859
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—610 **8 Claims**

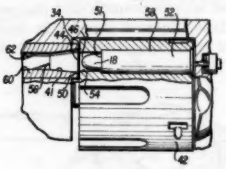


1. A self-standing all plastic floor sign comprising two panels hinged together at their upper ends for selectively folding and spreading the lower ends of the panels apart, one panel having an integral tubular hinge portion at its upper end provided with a longitudinal slot in its lower portion, the other panel having an integral core rotatable in said tubular hinge portion, said core having a laterally directed U-shaped notch adapted to allow the core to hook into and pass laterally through said slot into said tubular hinge portion by simultaneously rotating and pressing radially inward on the core to snap it past the upper edge of said slot.

4,253,261
REVOLVER

Friedrich Schmidt, 5904 Signal Hill Rd., Mechanicsville, Va. 23111

Filed Jul. 27, 1979, Ser. No. 61,544
Int. Cl.³ F41C *1/00*
U.S. Cl. 42—59 **9 Claims**

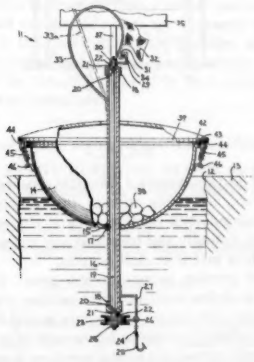


1. In a revolver comprising:
a frame;
a cylinder rotatable in the frame, said cylinder having parallel elongated, round-cross-sectioned, cylinder chambers therein for receiving bullet cartridges at first ends thereof and expelling bullets from second end thereof when said chambers are in a firing position;
a barrel mounted in said frame with an end thereof being held in close proximity to the second end of each of said chambers when they are in said firing position, said barrel defining a bore for receiving said bullets expelled from said second ends of said cylinder chambers, guiding said bullets along a path and finally expelling said bullets;
the improvement wherein:
passages of said cylinder chambers through which said bullets travel on route to said barrel bore have a diameter which is at least 0.005 inch larger than the bullets which will travel therethrough;
the bore of the barrel has a forcing cone which is at least ½ inch long; and
the gap between said barrel and said cylinder is less than 0.004 inch.

4,253,262
ICE FISHING TIPUP

Charles H. Johnson, Box 332, Plainfield, Wis. 54966

Filed Jun. 22, 1979, Ser. No. 51,146
Int. Cl.³ A01K *97/01*
U.S. Cl. 43—17 **7 Claims**



1. In a tipup for fishing through a hole in ice, float means, a source of heat, means for applying the heat from the heat source to the float means to generally prevent the water in the fishing hole from freezing over, a vertically extending tubular member supported by the float means and projecting above and beneath the float means, a shaft rotatably disposed generally centrally of the tubular member, a fishing line spool carried on the lower end of the shaft beneath said tubular member and being rotatable with the shaft to play out fishing line, a trip lever carried at the upper end of the shaft above the tubular member and being rotatable with the shaft, and means provided on the tubular member and engageable with the trip lever to interrupt rotation of the trip lever, shaft and line spool and thereby set the fishing depth for the fishing line, said means engageable with the trip lever being releasable from said lever in response to the playing out of fishing line and rotation of the line spool as when a fish runs with the fishing line.

4,253,263
FISHING LURE

Robert L. Franklin, 15 Silverwood Cir., Annapolis, Md. 21403, and Robert S. Steiner, P.O. Box 134, Annapolis, Md. 21404

Filed Apr. 27, 1979, Ser. No. 34,074
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.24 **6 Claims**

1. A fishing lure comprising:
(a) a flexible tube member having a pair of ends,
(b) a fish hook extending from one end of the tube member and a swivel member extending at the other end,
(c) a forming wire which returns to its preformed curved shape in the tube joining the hook and the swivel member,
(d) the end of the tube member having the swivel member therein bent back on itself forming a rounded end thereat, said tube having an outer surface of one color and an inner surface of another color whereby the bent back portion of the tube has a contrasting color relative to the remainder of the outer surface of the lure.

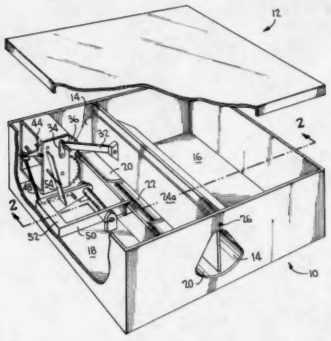
4,253,264
REPEATING ANIMAL TRAP

Anthony J. Souza, Lancaster, Pa., assignor to Woodstream Corporation, Lititz, Pa.

Filed Jan. 30, 1979, Ser. No. 7,835
Int. Cl.³ A01M *1/12*
U.S. Cl. 43—73 **5 Claims**

1. In a repeating animal trap comprising a housing defining an animal-trapping passageway having at least one entrance opening and an animal collecting compartment adjacent said passageway, a trigger means in said passageway, a sweeping mechanism for sweeping an animal from said passageway into said compartment, a repeating drive means for operating said sweeping mechanism on actuation of said trigger means by an animal in said passageway, resetting means for automatically resetting said trigger means subsequent to actuation thereof and power means for providing said drive means with sufficient power for plural operations of said sweeping mechanism,

the improvement wherein said animal collecting compartment is located laterally of said passageway and wherein said sweeping mechanism comprises a pair of reciprocatory wall members having one terminal position in which said wall members define opposed longitudinal walls of said passageway and said drive mechanism comprises means for providing a single reciprocation of said wall members on actuation of said trigger means in which said wall members move from said one terminal position toward said collecting compartment and return to said one terminal position, said drive means including a crank linkage connected to one of said wall members, a rotary drive wheel actuated by said power means for operating said crank linkage and a stop mechanism associated with said trigger means for constraining said drive wheel to perform a single revolution under the influence of said power means on actuation of said trigger means, said stop mechanism comprising an abutment means on said drive wheel, a stop member movable into and out of engagement with said abutment means and a



linkage between said stop member and said trigger means for moving said stop member out of engagement with said abutment means on actuation of said trigger means to permit rotation of said drive wheel and for moving said stop member back to engage said abutment means when said trigger means is automatically reset by said resetting means to constrain said wheel to a single revolution, said power means comprising a constant force spring for applying continuous torque to said drive wheel and manual wind-up means for tensioning said spring, said crank linkage of the drive means being positioned in a dead center condition when said wall members are in said terminal position and said abutment means being in engagement with said stop member when said wall members are in said terminal position, thus maintaining said wall members in said terminal position whenever said wall members are not being operated by said drive means, to prevent animals in the animal collecting compartment from gaining access to the passageway by the use of lateral force applied against said wall members.

4,253,265

ANIMAL TRAP

Francis D. Gardner, 128A Argyle St., 8th Floor, Kowloon, Hong Kong

Filed May 7, 1979, Ser. No. 36,310

Int. Cl.[3] **A01M** *23/24, 23/26*

U.S. Cl. 43—92 **8 Claims**

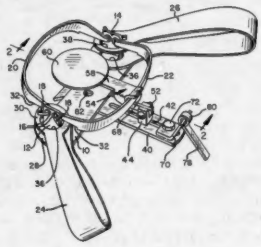
1. An animal trap comprising:

a base and a pair of opposing U-shaped jaws having opposite terminal ends pivotally supported by said base for rotation with respect to spaced parallel axes, said base having a side member extending outwardly therefrom,

spring means for urging said jaws from a first open position in substantially parallel relation to said base to a second closed position wherein said jaws are in upstanding, substantially adjacent juxtaposition,

a pan and a pan frame for carrying said pan, said frame having a catch adapted to engage one of said jaws in the open jaw position,

a pivotal support for said pan frame, said pivotal support being slidably positionable along said side member for selectively locating said catch in position for holding said one of said jaws in open position such that pivoting of said pan frame relative to said support in response to pan pressure is able to disengage the catch and spring the trap,



a trigger lever support for mounting on said side member,

and a trigger lever pivotally carried by said trigger lever support, said trigger lever being alternatively positionable across a said jaw for engagement with said catch on said pan frame to hold said jaw in open position,

said pivotal support being slidable along said side member away from said one of said jaws to bring said catch out of engaging relation with said one of said jaws to a second position for engagement with said trigger lever.

4,253,266

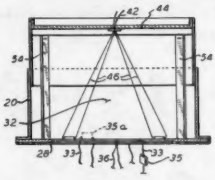
COLLAPSIBLE AND REUSABLE PINATA

Ricardo Bajo, 550 - 54th St., West New York, N.J. 07093

Filed Jul. 13, 1979, Ser. No. 57,182

Int. Cl.[3] **A63H** *33/00, 35/00*

U.S. Cl. 46—11 **11 Claims**



8. A collapsible and reusable pinata comprising in combination:

a first shell portion having a frangible closure at the bottom side thereof, and being open at the top side thereof;

at least a second shell portion open at the bottom thereof, and being slidingly and telescopically received within the open side of said first shell portion;

said second portion being movable away from said first portion, to define with said first portion a fully expanded position for said pinata; said pinata in said fully expanded position defining a volume for receipt of goods therein;

limiting means connected to said portions to restrain further movement of said portions away from each other upon said fully expanded condition being achieved;

suspending means secured to said pinata, and attachable to an overhead point for suspending said pinata from said point; and said limiting means and suspending means being constructed and arranged to maintain said pinata in said

fully expanded condition when suspended by said suspending means.

4,253,267

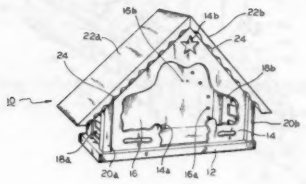
NATIVITY SCENE HOUSING CONSTRUCTION

Theodore Kocolowski, 14 Manor Ct., Joliet, Ill. 60436

Filed Sep. 11, 1978, Ser. No. 941,221

Int. Cl.³ A63H *33/06*

U.S. Cl. 46—19 **7 Claims**



1. A housing forming a small-scale replica of a dwelling or the like, comprising, in combination:

a base having at least one shot therein on one surface thereof and extending along at least a substantial portion of the peripheral edge thereof;

a front panel member and a rear panel member removably insertable in said slot of said base;

a pair of side members removably insertable into said slot at respective opposite ends of said panel members;

a plurality of vertically extending corner members respectively disposed at each intersection of said panel and side members wherein each corner member includes at least one slot for receiving a vertically extending edge portion of at least one of said panel and side members;

a roof including at least one roof member each having a pair of slots therein for removably receiving the upper edge portions of said panel members in press-fit frictional engagement therewith;

wherein said base is rectangular, wherein said panel members include a triangular upper portion the apex of which forms a peak and wherein said roof includes first and second peaked roof members which when assembled with said panel members form a peaked roof; and,

wherein there is provided four corner members each having a pair of transversely disposed slots therein extending the entire length thereof and wherein each of said corner members includes an inclined upper surface for engaging the assembled inclined surface of one of said roof members so that said corner members are captured by said roof members in their assembled configuration wherein horizontally outward movement of said corner members is precluded by the engagement of said inclined surfaces with said roof members.

4,253,268

PLAYTOY BUILDING BLOCK SET

August A. Mayr, Reinekestr. 34, D-8000 Munich 90, Fed. Rep. of Germany

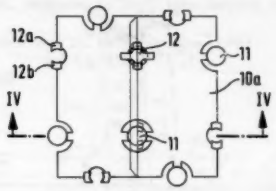
Filed Sep. 12, 1979, Ser. No. 75,177

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846666

Int. Cl.³ A63H *33/06*

U.S. Cl. 46—30 **12 Claims**

1. Toy building element sets comprising a plurality of building blocks in the form of generally planar square plates of semi-elastic plastic material with each side having similar mating snap locking elements therein of the ball and socket elastic pressure engagement type, said plates having a planar upper surface with the ball and socket elements having their center located on the edge of the plates and terminating at the lower planar surface of the plates so that the ball and socket elements extend upwardly from the lower planar surface of the plates, a further set of ball and socket elements located along the centerline of said plates, and said ball and socket elements of each



side including structures permitting two adjacent interlocked plates to be disposed at angles to each other over a range of 0° to 270°.

4,253,269

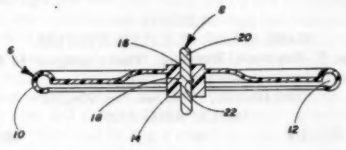
REVERSIBLE FLEXIBLE AERODYNAMIC DISC

Richard A. Sullivan, P.O. Box 6, East Rutherford, N.J. 07073

Continuation-in-part of Ser. No. 894,875, Apr. 10, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 74,950

Int. Cl.³ A63H *27/00*; A63B *65/00*

U.S. Cl. 46—74 D **10 Claims**



1. A reversible aerodynamic disc-shaped object, comprising:

(a) a thin, flexible disc;

(b) a central section having a central axis of rotation of said disc, disposed within the center of said disc, said section comprising a substantial amount of the weight of said disc-shaped object; and

(c) an outer rim section integrally formed with the periphery of said disc, said rim section extending from opposite sides of the horizontal plane of said periphery, said rim section comprising sufficient weight to create an arcuate, cross-sectional configuration in said disc-shaped object when said object is airborne, wherein said object exhibits a concave configuration facing down independent of the side of said object that is facing down.

4,253,270

INVISIBLE MARIONETTE

Carl E. Elwing, and Mary J. Elwing, both of 4032 Saginaw Trail, Drayton Plains, Mich. 48020

Filed May 18, 1979, Ser. No. 40,415

Int. Cl.³ G09F *11/00*

U.S. Cl. 46—126 **3 Claims**

1. An invisible marionette comprising:

a pair of feet;

a hand operated manipulator, said manipulator comprising:

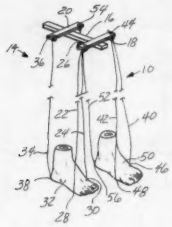
a longitudinal member; a front cross member affixed to the longitudinal member; a rear cross member affixed to the longitudinal member spaced from the front cross member;

a first pair of control lines extending from a left extremity of the front cross member to the sides of a front portion of the left foot;

a second control line extending from a left extremity of the rear cross member to a center of the heel of the left foot;

a third pair of control lines extending from a right extremity of the front cross member to the sides of a front cross

member to the sides of a front portion of the right foot; and



a fourth control line extending from a right extremity of the rear cross member to a center of the heel of the right foot.

4,253,271

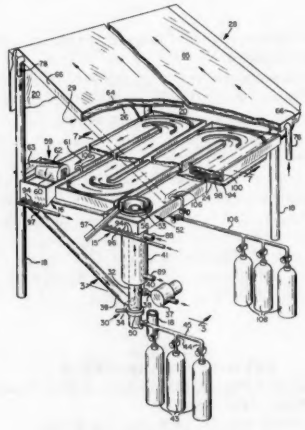
MASS ALGAL CULTURE SYSTEM

Lawrence P. Raymond, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Dec. 28, 1978, Ser. No. 974,051

Int. Cl.³ A01G *7/00*

U.S. Cl. 47—1.4 **15 Claims**



1. A gas lift pump mechanism for circulating a liquid medium containing an algal culture and for facilitating the separation of suspended substances from said liquid medium comprising:

a substantially vertical stand pipe having a liquid medium inlet and a medium outlet located above said inlet;

first gas inlet means for introducing a sufficient volume of gas into liquid medium inside said pipe to cause said medium to rise therein; and

second gas inlet means, separate from said first gas inlet means, for introducing a stream of minute gas bubbles into said liquid medium inside said pipe which bubbles adhere to suspended substances in said liquid medium and increase the buoyancy of said substances.

4,253,272

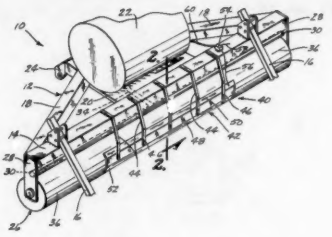
MOISTURE SENSING APPARATUS AND METHOD FOR AN AGRICULTURAL CHEMICAL APPLICATOR

Kevin I. Bertness, 2128 S. Riverside, Iowa City, Iowa 52240

Filed Oct. 25, 1979, Ser. No. 87,996

Int. Cl.³ A01C *23/00*

U.S. Cl. 47—1.5 **14 Claims**



1. An agricultural chemical applicator comprising,

a frame adapted for connection to a vehicle,

an elongated applicator roller rotatably carried on said frame, said roller having a generally cylindrical surface adapted to engage crop plants in response to movement of the frame by said vehicle,

a liquid chemical reservoir,

dispensing means in communication with said reservoir and operatively associated with said roller for dispensing liquid chemicals onto the surface thereof,

an elongated sensor plate,

support means for supporting said sensor plate on said frame in generally parallel closely spaced relation to said roller, said support means being adapted to electrically insulate said sensor plate from said surface, and

an electrical circuit means wherein said sensor plate and roller surface are electrically connected as opposite plates of a capacitor, whereby the capacitance thereof increases with the amount of moisture on said surface,

said electrical circuit including means for interpreting the capacitance of said capacitor as a measurement of the amount of moisture on said surface and means for comparing said measurement to a predetermined value.

4,253,273

PRODUCTIVE USE OF CEDAR HOG WASTE

David H. Rees, Jr., 315 Chestnut St., and Gerald A. Hickey, 110 West Castle St., both of Mount Shasta, Calif. 96067

Division of Ser. No. 843,436, Oct. 18, 1977, Pat. No. 4,154,174. This application Jan. 12, 1979, Ser. No. 3,041

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—58 **8 Claims**

1. A method of enhancing the growth of desirable vegetation in a growth supporting medium comprising applying to said medium ground remnants of incense cedar timber including bark, sawdust and wood.

4,253,274

PROPAGATING THE PINEAPPLE PLANT

Jeffrey E. Gold, 13126 Anza Dr., Saratoga, Calif. 95070

Filed Nov. 1, 1979, Ser. No. 90,429

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—58 **3 Claims**

1. The improved method of propagating plants of the genus Ananas by the following steps:

a. cutting a rosette of leaves from the top of a plant substantially at the junction of the leaves and the flesh, leaving no flesh attached to said rosette;

b. peeling the bottom leaves from said rosette, leaving an exposed stalk having a plurality of bumps thereon;

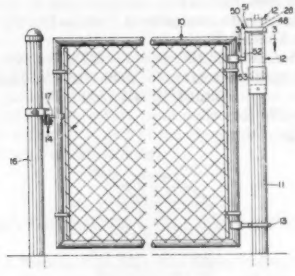
c. inserting said exposed stalk into a moist rooting medium and permitting said cutting to develop roots.

4,253,275

GATE HINGE AND LUBRICATING MEANS THEREFOR

Jack D. Killough, Rte. 2, Box 121K, Cordova, Ala. 35550

Filed Jul. 6, 1979, Ser. No. 55,323
Int. Cl.[3] E05D *7/06;* **E05F** *1/04*
U.S. Cl. 49—239 **2 Claims**



1. In a supporting and gravity closing hinge for a vertically movable gate mounted to swing in a generally horizontal plane,

(a) an upstanding cylindrical casing adapted to be attached to a supporting post,

(b) closure means closing the lower end of said cylindrical casing,

(c) an upstanding pintle fixedly mounted within said cylindrical casing and concentric therewith,

(d) a lower sleeve surrounding said pintle and fixedly mounted adjacent the lower end of said casing,

(e) an upper sleeve rotatable about said pintle and adapted to be attached to the gate,

(f) at least one intermediate sleeve rotatable about said pintle between said upper and lower sleeve,

(g) said lower, upper and intermediate sleeves being mounted in spaced relation to the outer surface of said pintle and the inner surface of said cylindrical casing to define an annular lubricant receiving reservoir between said pintle and the inner surfaces of said sleeves and an annular lubricant receiving reservoir between the outer surfaces of said sleeves and said inner surface of said cylindrical casing so that a continuous annular column of lubricant is provided at both sides of said sleeves, and

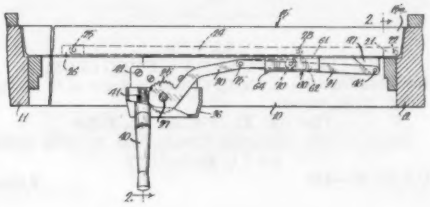
(h) coacting engageable cam surfaces on adjacent ends of said lower, upper and intermediate sleeves urging the gate toward closed position upon rotation of the upper and intermediate sleeves.

4,253,276

OPERATOR FOR A CASEMENT-TYPE WINDOW

Jeffory A. Peterson, Canby, and Eric W. Nelson, Minneapolis, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Filed May 31, 1979, Ser. No. 44,003
Int. Cl.[3] E05D *15/28*
U.S. Cl. 49—249 **7 Claims**



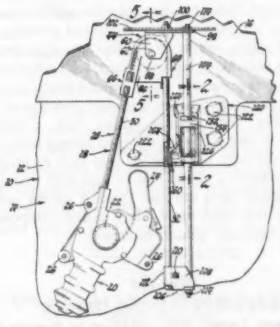
1. An operator for a casement-type window comprising, a sash and a frame with a slider structure therebetween enabling combined pivoting and linear movement of the sash, operating linkage for imparting opening and closing movement to said sash including a pivotable operating arm, a link connecting the operating arm with the sash, said connecting link being pivoted at one end to said operating arm intermediate the ends thereof and pivoted at the other end to a fixed location on the sash, a constraining link connected between the frame and sash for controlling sash movement, a roller mounted at an end of said operating arm, and a channel member mounted on said sash to receive said roller and having a length to only be engaged by said roller when said sash is located at or between closed and partially open positions.

4,253,277

TAPE DRIVE MECHANISM

Gerald J. Campbell, and Stephen J. Fiordellisi, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1979, Ser. No. 69,982
Int. Cl.[3] E05F *11/48*
U.S. Cl. 49—352 **5 Claims**



1. In combination with a support having a window opening, a window movable along a predetermined path between open and closed positions relative to the opening, a flexible tape for moving the window, and drive means for moving the tape, the improvement comprising, track means for guiding movement of the tape and including a pair of angularly related elongated channel track sections slidably receiving the tape and having respective adjacent ends, the track sections having longitudinally elongated openings which face in the same general direc-

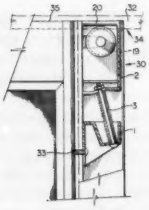
tion, window drive means mounted on the window and secured to the tape through the opening of one track section, a housing located intermediate the adjacent ends of the track sections and including a rotatable roller and a pair of mounting sections, each mounting section receiving a respective track section end and including means locating the track sections with their openings facing in the same general direction and locating the adjacent ends thereof and the tape moving therethrough generally tangential to the roller, the roller guiding the tape during movement thereof between the track section ends.

4,253,278

ROLLER DEVICE FOR A SLIDING CLOSURE

Raymond Dallaire, St. David, Canada, assignor to P. H.-Tech., Inc., Levis, Canada

Filed Apr. 27, 1979, Ser. No. 33,849
Claims priority, application Canada, Mar. 20, 1979, 323829
Int. Cl.³ E05D *13/02*
U.S. Cl. 49—420 **9 Claims**



1. A roller device for a sliding closure of the type having a channel along at least one side thereof, comprising:
- first and second members in said channel and adapted for sliding engagement therein;
- spring means connecting together said first and second members;
- said first member being adapted for removable. secure attachment to said sliding closure;
- the position of said second member being slidingly adjustable relative to said first member;
- said second member being adapted to slide along a track associated with an aperture within which said sliding closure can be installed; and
- a recessed roller mounted for rotation within said second member for rolling along a top edge of a track;
- wherein said spring means comprises an adjustable spring-loaded link extending between said first and second members for maintaining said spring means under compression so as to limit the maximum outward position of said second member, said spring-loaded link comprising a threaded bolt and nut with a coiled spring fitted over the shank of said bolt, the head of said bolt extending from said first member and the end of said bolt resting in said second member with said nut located within said second member so that said spring lies under compression between said first and second members.

4,253,279

PRECISION HONING DEVICE

Wayne W. Althen, Ladue, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Jul. 30, 1979, Ser. No. 61,599
Int. Cl.³ B24B *5/00, 33/02*
U.S. Cl. 51—1 **16 Claims**

1. A honing device for honing bore surfaces comprising a tubular sleeve having a smaller diameter first end and outer work engaging surface formed by a surface layer including particles of a relatively hard wear resistant abrasive material, and inner surface tapered from end-to-end of the sleeve, a slot through said sleeve from end-to-end to facilitate expansion and contraction thereof, said outer abrasive surface having a first constant frusto-conical shaped portion extending from adjacent to the smaller diameter first end of the sleeve to a larger diameter opposite end intermediate the length of the sleeve, a second frusto-conical shaped portion extending from and contiguous with the larger diameter end of the first portion to a

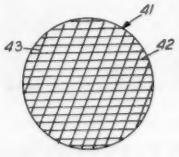
still larger diameter opposite end, the rate of axial taper of the first frusto-conical shaped portion being greater than the rate of the axial taper of the second frusto-conical shaped portion whereby the first portion will remove material from a bore surface being honed thereby at a faster rate than the second portion, the larger diameter end of the second frusto-conical shaped portion determining the final diameter to which the bore surface is honed.

4,253,280

METHOD OF LABELLING DIRECTIONAL CHARACTERISTICS OF AN ARTICLE HAVING TWO OPPOSITE MAJOR SURFACES

Loring E. Du Bois, Kansas City, and Lawrence D. Simpson, Lee Summit, both of Mo., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 863,107, Dec. 22, 1977, Pat. No. 4,170,021.
This application Mar. 26, 1979, Ser. No. 24,222
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—283 R **5 Claims**



1. A method of labeling the orientation of directional characteristics extending between two major opposite surfaces of an electronic article, the characteristics terminating in opposite polarities at each of the surfaces, which comprises:
- preselecting an asymmetric surface shape and a mirror image thereof as two mutually distinct geometric surface shapes, each shape to identify one of the polarities; and
- forming edges substantially perpendicular to each of the surfaces to generate at one of the surfaces the asymmetric surface shape identifying the polarity which terminates at such surface, and at the opposite surface the mirror image of the asymmetric surface shape to identify the other one of the polarities.

4,253,281

ANTI-GUTTER CLOGGING AND DEBRIS REMOVAL DEVICE

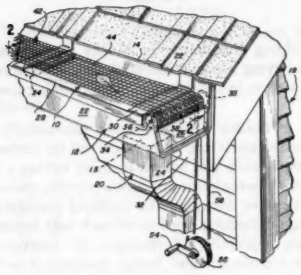
Michael Ruttenberg, 2428 S. Conway, Apt. 282, Orlando, Fla. 32806

Filed Nov. 6, 1979, Ser. No. 91,834
Int. Cl.³ E04D *13/00*
U.S. Cl. 52—12 **6 Claims**

1. An anti-clogging and debris removal device for maintaining gutters free from the flow obstructing effects of leaves, twigs and other debris which prevent the free flow of water within and from said gutters; the gutters being longitudinally

elongated, horizontally disposed, generally channel-shaped members, said channel-shaped members defined by opposed, generally upright side walls, a bottom wall spacing said side walls and opposite, distal end walls, said channel-shaped gutter members adapted to collect and remove precipitation and other moisture from the roofs of buildings; the anti-clogging and debris removal device comprising, in combination:

rotatable roller means securely positioned adjacent the opposite distal end walls of an elongated, channel-shaped gutter member;



a continuous, endless, mesh-like conveyor belt trained for rotation about said roller means, said conveyor belt having a width only slightly less than the space between the side walls of said channel-shaped gutter member; and

selectively actuatable drive means for selectively rotating said roller means whereby activation of said drive means operates to rotate said roller means and longitudinally move the endless conveyor belt to transport leaves, twigs and other debris which have collected on the conveyor belt to a distal end wall of the elongated, channel-shaped gutter member for removal.

4,253,282

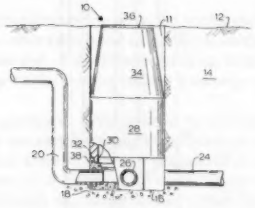
PREFORMED MANHOLE BASE SECTION CONSTRUCTION

Benjamin E. Swartz, P.O. Box 466, Grass Valley, Calif. 94945

Filed Feb. 15, 1978, Ser. No. 877,836

Int. Cl.[3] E02D *29/12*

U.S. Cl. 52—20 **5 Claims**



1. In a prefabricated concrete unitary manhole base section for providing access to and connection of a plurality of standard subterranean drainpipe conduit at the location thereof, said section having at least one inlet and one outflow, interior structure defining a flow channel from each inlet to the outflow, and annular flange means at periphery of the top of said section for engaging a cylindrical concrete pipe section thereon, the improvement comprising:

a polygonal exterior wall structure having a thickness greater than said annular flange means and a plurality of substantially vertical faces with each face aligned in a different direction than the other faces;

said outflow being a substantially cylindrical lateral opening provided at one of said faces and defined by and extending through said exterior wall structure;

at least one of said inlets being a substantially cylindrical lateral opening provided at another of said faces and defined by and extending through said exterior wall structure, said other face being at least at right angles to said face having said outflow opening therein;

each of said openings being sized and shaped to receive an end portion of a said standard drainpipe conduit directly in a secure closely fitting engagement therewithin;

resilient sealing means compressed between each said opening and said end portion therein for providing a watertight seal therebetween.

4,253,283

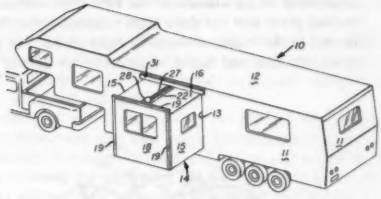
EXTENSIBLE TRAILER SECTION ROOM

John C. May, Rt. 1, Box 27, Concordia, Mo. 64020

Filed Jun. 29, 1979, Ser. No. 53,432

Int. Cl.[3] E04B *1/346*

U.S. Cl. 52—67 **3 Claims**



1. The combination of a travel trailer and an extension room therefor and means movably positioning said extension room in said travel trailer, said travel trailer having a main frame, a floor, walls and a roof secured thereto, said main frame consisting of horizontally disposed vertically spaced upper and lower box frame members positioned longitudinally of said travel trailer and vertical box frame members positioned between said horizontally disposed upper and lower box frame members, said extension room having a secondary floor, walls and roof being movable disposed in an opening in a wall of said travel trailer, an end wall support frame secured to said extension room, a support frame positioned on said upper box frame members of said main frame of said travel trailer adjacent said roof thereof, said support frame consisting of an elongated traversely positioned frame member, angularly positioned brace frame members extending between said elongated frame member and one of said upper box frame members, and a second support frame telescopically engaged in said first support frame and movable relative thereto, said end wall support frame of said extension room attached to said second support frame and suspended therefrom, and a mechanical device for imparting longitudinal movement whereby said extension room may be moved relative to said travel trailer while suspended from said second support frame.

4,253,284

FOLDABLE AND CURVILINEARLY EXTENSIBLE STRUCTURE

Robert L. Bliss, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Jun. 11, 1979, Ser. No. 47,961

Int. Cl.[3] E04H *12/18*

U.S. Cl. 52—109 **10 Claims**

1. A foldable and curvilinearly extensible structure comprising:

a plurality of base modules, each base module comprising six rigid members flexibly interconnected end-to-end in a

closed figure with the closed figure being configurated with:

one end of the first rigid member swivelly interconnected to one end of a second rigid member in a first swivel;

the other end of the second rigid member swivelly interconnected to one end of a third rigid member in a second swivel;

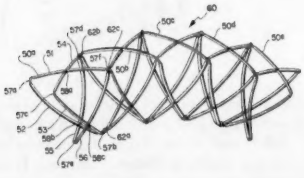
the other end of the third rigid member swivelly interconnected to one end of a fourth rigid member in a third swivel;

the other end of the fourth rigid member swivelly interconnected to one end of a fifth rigid member in a fourth swivel;

the other end of the fifth rigid member swivelly interconnected to one end of a sixth rigid member in a fifth swivel;

the other end of the sixth rigid member swivelly interconnected to the other end of the first rigid member in a sixth swivel;

each base module further including the first rigid member pivotally connected to the inside of the fourth rigid member in a first pivot, the second member pivotally connected to the outside of the fifth rigid member in a second pivot and the third rigid member pivotally connected to the inside of the sixth rigid member in a third pivot, the first and fourth rigid members having a first length while the second, third, fifth and sixth rigid members have a second length, the first pivot being located at the midpoint of the first and fourth rigid members while the second and third pivots are equidistantly located on their respective rigid members at a location from the swivel between the first pivot and the respective second and third pivots corresponding to one-half the length of the first and fourth rigid members; and



said foldable and curvilinearly extensible structure comprising flexibly and serially interconnected base modules, wherein the first base module is flexibly interconnected to a second base module by flexibly joining the first, third and fifth swivels of the first base module to the second, fourth and sixth swivels of the second base module, respectively, and the second base module is flexibly interconnected to a third base module by flexibly joining the first, third and fifth swivels of the second base module to the second, fourth and sixth swivels of the third base module, respectively, thereby swivelly and flexibly interconnecting a plurality of base modules to form the foldable and curvilinearly extensible structure, the curvilinear contour of the extended structure being selectively predetermined by the relative lengths of the respective rigid members and the degree of extension of the structure, the structure being foldable into a relatively flat configuration having a generally isosceles triangular outline.

4,253,285

PERCOLATING WATER DRAINAGE SYSTEM

Michael F. Enright, 153 N. River Rd., Munroe Falls, Ohio 44262

Filed Dec. 11, 1978, Ser. No. 968,465
Int. Cl.³ E04B 1/64
U.S. Cl. 52—169.5 **1 Claim**

1. In a building foundation of blocks interconnected by mortar joints having a particular thickness, the improvement of a drainage system to the exterior of the building foundation, comprising:

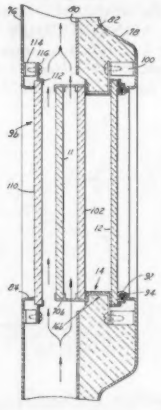
a plurality of hollow members being substantially of said particular thickness and being received by certain of the mortar joints, each said hollow member having a drainage portion and a percolation collection portion, and each said hollow member engaging the building foundation, said percolation collection portion of each said hollow member having a plurality of apertures for receiving water from the foundation and being maintained within the associated mortar joint, said drainage portion of each said hollow member extending from the exterior of the building foundation, whereby said hollow members remove fluid from the building foundation and transfer it outside of the building.

4,253,286

CLIP-AIRE OVEN DOOR WINDOW

Joseph W. Katona, 2222 Paulette Dr., Walled Lake, Mich. 48088

Filed Oct. 26, 1978, Ser. No. 954,977
Int. Cl.³ E06B 7/12
U.S. Cl. 52—171 **10 Claims**



1. A self-contained window unit adapted to be assembled in an oven door having front and back panels with aligned window openings therein, comprising first and second glass panes, means for holding said panes in spaced parallel relation including a substantially continuous spacer between said panes having means engaging the peripheral edge portion of one of said panes and having outwardly opening channel-shaped seat portions, and individual clips having mounting portions of outwardly opening channel-shaped configuration matching that of said seat portions and seated in said seat portions, said clips being fulcrummed on said spacer in a manner permitting

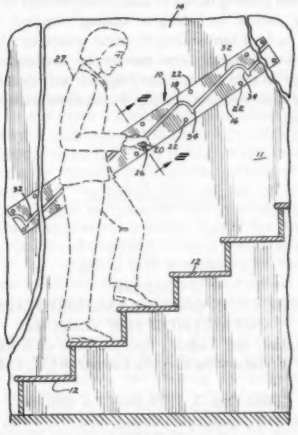
movement of said mounting portions thereof into and out of seating engagement in said seat portions, said clips also having clip portions spaced from the fulcrum point thereof and engaging the peripheral edge portion of the other of said panes to support said other pane and to retain said mounting portions of said clips seated in said seat portions.

4,253,287

STEP WALKER

Kenneth R. Overmoe, 6644 Columbus Ave. South, Minneapolis, Minn. 55423

Filed Jun. 28, 1979, Ser. No. 52,757
Int. Cl.³ E04F *11/18*
U.S. Cl. 52—184 **9 Claims**



1. A step walker for use by persons needing support while moving up and down a stairway sloped at an acute angle with respect to horizontal, said step walker including:

A. a pair of parallel, spaced-apart elongated guide railings fixedly positioned above and on either side of a stairway and having substantially the same slope as that of the stairway;

B. each of said railings being provided with a guideway open toward the other railing and extending from the lower end to the upper end of its railing and lying in exact parallel relationship to the corresponding guideway in the other railing;

C. each such guideway being defined by a plurality of elongated ramp sections extending in direction up the stairway from a lower toward an upper portion of its railing at an angle greater than the slope of the stairway with respect to the horizontal, and being further defined by a plurality of ratchet tooth holding sections each extending between adjacent ends of adjacent ramp sections;

D. a walking bar of dimension and configuration to be extended at a right angle with respect to said guide railings from position in contact with one guideway, across the stairway to position in contact with the other guideway, and of dimension and configuration to be slideable freely along said guideways; and

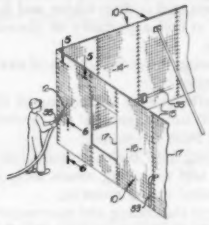
E. wherein the angle and shape of the ratchet tooth holding sections is such that any downward component of force exerted on the walking bar while it is vertically above a pair of said ratchet sections will tend to cause the bar to slide down the ratchet sections to position of arrest at the lowest end of the next adjacent uphill ramp sections.

4,253,288

PREFABRICATED WALL PANEL

Joo H. Chun, 845 S. Grand View St., Los Angeles, Calif. 90057

Filed Jul. 13, 1979, Ser. No. 57,385
Int. Cl.³ E04F *13/04*; E04G *21/12, 21/00*
U.S. Cl. 52—454 **7 Claims**



1. A panel for receiving a supply of liquid insulating material and producing therefrom a modular insulating building panel of the type over which surface coatings such as plaster and stucco can be applied, comprising:

a plurality of slender, elongated rods arranged to define a 3-dimensional lattice, said lattice having a pair of substantially parallel major lateral upper and lower surfaces, side surfaces, and end surfaces;

a plurality of wires transversing the interior of said lattice and interconnecting said major lateral surfaces to define a plurality of passages within said lattice, said wires describing identical zig-zag paths, having upper and lower points that alternatingly approach the upper and lower major lateral surfaces and being disposed within said lattice to form in said upper lateral surface rows of upper points extending perpendicularly to the path of said wires;

fabric means for containing the supply of liquid insulating material defining a plane parallel to said major lateral surfaces, said fabric means being impervious to said supply; and

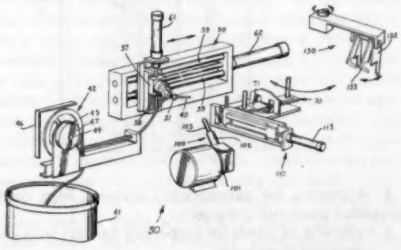
a web for positioning said containing means, said web being fixedly attached to said wires in a plane parallelling said major lateral surfaces having portions lying within the interior of said upper points.

4,253,289

APPARATUS FOR COILING AND BINDING STRAND MATERIAL

Michael A. Cole, Lutherville, and Walter W. Morgan, Fallston, both of Md., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 92,812
Int. Cl.³ B65B *57/10, 63/06*
U.S. Cl. 53—53 **15 Claims**



1. An apparatus for coiling and binding strand material, said apparatus including:

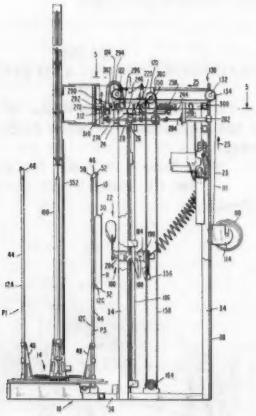
means for coiling a length of strand material;
means moveable between a position adjacent said coiling means and a position removed therefrom for feeding a leading end of a supply of strand material into proximate engagement with said coiling means;
means for securing the leading end of the supply of strand material to said coiling means;
means for causing said feeding means to be moved to said position adjacent said coiling means and for causing said coiling means to coil a plurality of convolutions of the strand material;
means for distributing the convolutions of strand material on said coiling means;
means rendered effective by the coiling of the plurality of convolutions of strand material for severing the coiled strand material from the supply;
means for removing said coiled strand material from said coiling means, said removing means including means for holding said coiled strand material;
means responsive to the coiling and movement of a predetermined length of strand material into a binding position for binding together the convolutions of the coiled strand material to produce a bound coil of strand material;
means for moving said removing means between a position aligned with said coiling means and said binding position, said moving means in a cycle of operation of said apparatus moving said removing means for said coiling means to said binding position and, subsequent to the binding of said coiled strand material, moving said removing means through a discharge position to the position aligned with said coiling means; and
means effective as the removing means is moved through the discharge position for causing said holding means to release said bound coil of strand material.

4,253,290

AUTOMATIC BAGGING MACHINE

Vincent N. Vulcano, 301 E. 48th St., New York, N.Y. 10017, and Maurice W. Friedman, 548 Barnard Ave., Woodmere, N.Y. 11598

Filed Mar. 29, 1979, Ser. No. 25,208
Int. Cl.[3] B65B *5/02*
U.S. Cl. 53—256 **16 Claims**



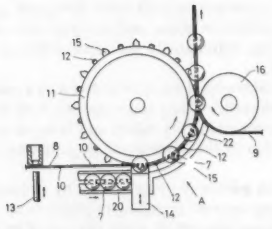
1. Apparatus for automatically forming bags on hanger suspended garments comprising;
a. a plurality of stands for supporting hangers with garments suspended therefrom,
b. means for moving each of said plurality of stands in sequence to at least first, second and third positions, each of said stands remaining stationary for a brief interval at each of said positions following its arrival thereat, each of said stands being adapted to have a hanger suspended garment mounted thereon when said each stand is at said first position,
c. adjustable placing means at said second position for pulling down tubular material along a path,
d. cutting means above the garment moving towards the material to cut the tubular material, and away from the material to permit pulling down of additional tubular material, said cutting means includes a cutting blade extending transversely across said path, and means comprising rubber strips extending along the side of the cutting edge and rearwardly of the cutting edge for pressing against and holding said material so that the material is more evenly cut;
e. sealing means above the stands moving toward the material to seal the tubular material and away from the material to permit pulling down of additional tubular material, said sealing means including a sealing element means and means to heat said sealing element means to a heat sealing temperature during the movement toward the tubular material to seal the tubular material and to a lower non-sealing temperature during movement away from the material.

4,253,291

ELECTRONIC COMPONENTS ASSEMBLY APPARATUS AND METHOD FOR MAKING

Akio Yamagami, and Tadashi Kubota, both of Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 7, 1979, Ser. No. 101,186
Claims priority, application Japan, Dec. 11, 1978, 53-153501
Int. Cl.[3] B65B *15/04*
U.S. Cl. 53—399 **6 Claims**



1. A method of making electronic component assembly comprising the following steps:
forming perforations on a supporting tape with a predetermined distance from each other,
transporting said supporting tape by engagements of projections provided around a rotating drum into said perforations,
putting electronic components on predetermined positions of said supporting tape by guiding lead wires of said electronic components to said predetermined positions by guiding members which are provided on predetermined positions around said rotating drum,
bonding at least a bonding tape on said supporting tape in a manner not to cover said perforations, thereby to hold lead-wires of said electronic components on said supporting tape.

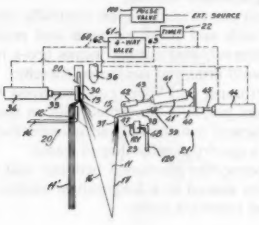
4,253,292
AUTOMATIC WEIGHING AND BAGGING MACHINE

Arnold Lipes, 6521 Merton Rd., Cote St. Luc, Quebec, Canada

Continuation-in-part of Ser. No. 852,678, Nov. 18, 1977, Pat. No. 4,172,349. This application Jun. 12, 1979, Ser. No. 47,697

Int. Cl.[3] **B65B** *1/32, 43/30*

U.S. Cl. 53—502 **19 Claims**



1. An automatic weighing and bagging machine for placing a weighed product in a first bag of a plurality of juxtaposed bags held in said machine, said bags each having an extended tab secured to a portion thereof, said tab extending above a mouth opening of said bag, said machine comprising retaining means for supporting said plurality of bags in juxtaposition, bag opening means for opening said mouth opening of said first bag, clamping means associated with said bag opening means for holding said bag in an open position by clamping said bag from opposed sides thereof, a weigh bucket for holding and weighing a product to be bagged, a weigh scale coupled to said weigh bucket for weighing said product to be bagged, discharge means for displacing said weighed product from said container weighing means to said open mouth of said first bag to place said weighed product in said first bag, said discharge means being a tipping mechanism for displacing said bucket on a pivotal attachment for discharging said weighed product therein into said first bag, said tipping mechanism having a piston activated linkage having bucket engaging means releasably engageable with said bucket for causing said bucket pivotal displacement and to release said bucket for weighing said product therein, sensing means to detect the delivery of said weighed product to said first bag, said sensing means being operable by said tipping mechanism when said bucket is displaced to its discharge position to reset said sensing means, said sensing means being a sensing switch connected to a main pneumatic valve of said actuating means to cause said bagging machine to go through a complete bag opening cycle when said switch is released from said tipping mechanism when said bucket is returned to a loading/weighing position, and actuating means for releasing said holding means and clamping means to cause said first bag with said weighed product to be released from said machine due to its own weight.

4,253,293
APPARATUS FOR INSERTING FINNED PACKAGES INTO CONTAINERS

Horst Loewenthal, Tiengen, Fed. Rep. of Germany, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

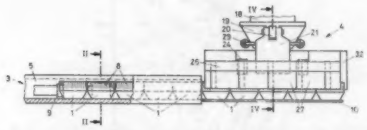
Filed Mar. 12, 1979, Ser. No. 19,606

Claims priority, application Switzerland, Mar. 15, 1978, 2832/78

Int. Cl.[3] **B65B** *35/36*

U.S. Cl. 53—537 **7 Claims**

1. Apparatus for inserting into a container successive groups of finned packages, each finned package having two fins with each fin protruding from a respective one of two opposite ends of the package and each group being composed of a plurality of such packages disposed in abutting relation to one another so that each fin of each package extends along a respective side of the group, said apparatus comprising: a common clamping device for holding one such group of packages at a time and composed of a body defining two counter jaws protruding laterally from its lower end, and means defining two clamping jaws each associated with, and movable relative to, a respective counter jaw, said clamping jaws and counter jaws being positioned relative to one another for permitting the fins along one side of a group to be clamped between one said counter jaw and its associated clamping jaw when the fins at the other side of the group are in a position to be clamped between the other said counter jaw and its associated clamping jaw; and



means defining a feed channel upstream of said clamping device for feeding successive groups of finned packages to said clamping device, said feed channel having upwardly extending side walls each presenting a passage for guiding the fins along one side of a group of packages; wherein said feed channel is positioned relative to said clamping device in such a manner that each said passage is aligned with the space formed between a respective counter jaw and its associated clamping jaw, when said jaws are at least partly open.

4,253,294
MOWING MACHINE

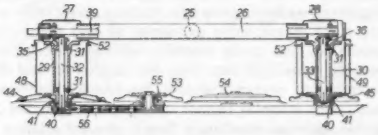
Petrus W. Zweegers, Nieuwendijk 46, Geldrop, Netherlands

Filed May 16, 1979, Ser. No. 39,686

Claims priority, application Netherlands, May 26, 1978, 7805731

Int. Cl.[3] **A01D** *35/264*

U.S. Cl. 56—13.6 **12 Claims**



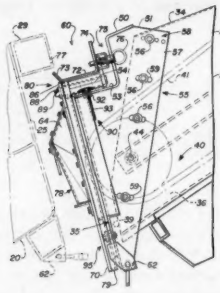
1. A mowing machine comprising a frame, a hollow frame beam extending from said frame in a direction transversely to the direction of movement of the machine during normal operation, a hollow frame member spaced vertically below said hollow frame beam and parallel thereto, a plurality of cutting members rotatably supported on said hollow frame member, said cutting members comprising first and second outer members and at least one other cutting member between said outer cutting members, said outer cutting members each being mounted on a shaft and said shafts having their upper ends journaled in said hollow frame beam, drums rotating with said outer cutting members and surrounding said shafts, a drive shaft within said hollow frame beam drivingly connecting said outer cutting member shafts, a plurality of pinion gears within said hollow frame member drivingly interconnecting said other cutting members with one of said outer cutting members, and means on said frame for drivingly interconnecting said drive shaft and a power take-off shaft of an agricultural tractor.

4,253,295

LATERAL FLOAT MECHANISM FOR COMBINES

Larimer J. Knepper, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 5, 1979, Ser. No. 91,445
Int. Cl.[3] A01D *67/00, 41/00*
U.S. Cl. 56—15.6 36 Claims



1. A feeder house extending from combine base unit for transferring harvested crop material collected by a detachable header to said base unit for further harvesting treatment, said feeder house comprising:

a frame;

an elongated forwardly extending body portion supported by said frame, said body portion having a forward end, including a crop inlet opening, a rearward end, including a crop outlet opening, a passageway extending between said crop inlet and crop outlet openings for the passage of crop material to said base unit, and a centerline extending between said forward end and said rearward end, whereby said feeder house is substantially equally situated on either side of said centerline, said forward end including an attachment face for connection to the header;

a crop conveying means operably housed within said body portion for transporting crop material rearwardly towards the base unit;

a cradle assembly having a pivot means pivotally attaching said cradle assembly to said attachment face, said cradle assembly having a crop passage opening substantially registered with said crop inlet opening, said cradle assembly pivot means being proximate to said body portion centerline, said cradle assembly including a header connecting means for attaching the header to said cradle assembly to prevent relative movement therebetween, said cradle assembly further having retaining means cooperable with said attachment face to prevent relative fore-and-aft movement therebetween while allowing pivotal movement of said cradle assembly in a substantially vertical plane, and a pivot control means cooperatively associated with said cradle assembly and said attachment face for selectively controlling the extent of pivotal movement therebetween; and

drive means for driving said crop conveying means.

4,253,296

APPARATUS AND METHOD FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

N. Howard Boydston, Dearborn, Mo. 64439

Filed Jun. 21, 1979, Ser. No. 50,822
Int. Cl.[3] A01D *23/00, 55/02*
U.S. Cl. 56—238 7 Claims

1. An apparatus for controlling growth of unwanted plants which project upwardly of a cultivated crop growing in a field, said apparatus comprising:

(a) elongate cutting means adapted for severing an upper portion of each of said upwardly projecting unwanted plants from an associated root portion thereof; and

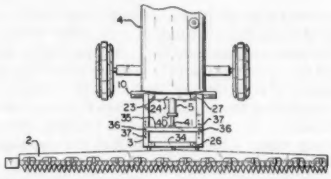
(b) a frame having a first portion thereof connected with and supporting said cutting means, and a second portion thereof adapted for connection with an agricultural vehicle; said frame including:

(1) a rearward pair of spaced apart vertically oriented arms adapted for rigid connection with a front portion of the agricultural vehicle;

(2) a forward pair of spaced apart vertically oriented arms, aligned with said rearward arms and positioned forwardly thereof; said cutting means being mounted on said forward arms and supported thereby;

(3) a pair of upper and lower coupling arms having each end thereof pivotally connected with an associated one of the rearwrd and forward arms respectively thereby forming a quadrilaterally shaped frame;

(4) a transverse bar positioned between said upper coupling arms spaced at a longitudinal distance from the associated rearward arms;



(5) means selectively rotating said upper and lower coupling arms for raising and lowering said cutting means with respect to the ground; said coupling arm rotating means including a power ram having a first end thereof pivotally attached to said transverse bar so as to be connected to said upper coupling arms at a first connection point thereon spaced from the associated rearward arm and a second end thereof pivotally connected to a stationary portion of said agricultural vehicle at a second connection point that is situated below said first connection point whereby ram extension elevates said elongate cutting means and positions same at a selected height; said first connection point being variable thereby allowing for a greater control of height variation of said elongate cutting means while in use; and wherein

(6) said quadrilaterally shaped frame comprises a parallelogram whereby said cutting means is retained in a substantially level, horizontal orientation during raising and lowering of the cutting means.

4,253,297

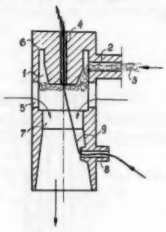
METHOD AND APPARATUS FOR THE PRODUCTION OF CORE YARN

Jan Pacholski; Zenon Kujawski; Ryszard Janczyk, and Marian Bartczak, all of Lodz, Poland, assignors to Centralny Osrodek Badawczorozwojowy Maszyn Wlokienniczych "Polmatex-Cenaro", Lodq, Poland

Continuation-in-part of Ser. No. 890,820, Mar. 27, 1978, abandoned. This application Sep. 29, 1978, Ser. No. 948,008
Claims priority, application Poland, Mar. 31, 1977, 197115
Int. Cl.[3] D01H *1/13;* D02G *3/36*
U.S. Cl. 57—5 7 Claims

1. Apparatus for producing core yarn comprising a stationary spinning chamber having opposite ends, a partition at one of said ends closing said chamber, the other end being open and connectible with a suction source, air guide vanes disposed at the periphery of said chamber, first channel means for supplying yarn forming a core, second channel means for supplying staple fibers, said spinning chamber including first and second portions respectively having cylindrical sections of larger and

smaller diameter adjoining one another in axial alignment along a common axis, the cylindrical section of larger diameter having said air guide vanes and said second channel means opening thereto, said partition being provided with a channel for discharge of finished yarn, said second channel means having an inlet into said chamber at a level beyond the inlet of



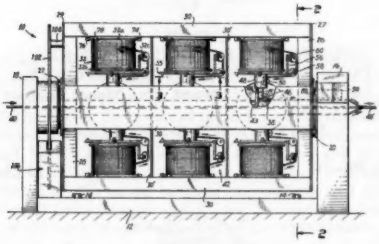
said channel in said partition into said spinning chamber and beyond the inlet of said air guide vanes into said spinning chamber, said first channel means having an inlet into said spinning chamber at said second portion to lead said yarn towards said channel along a straight line at an angle with respect to said axis of the chamber.

4,253,298

HIGH SPEED CAGE FLY-OFF STRANDER

Joseph Varga, Toronto, Canada, assignor to Cecco Machinery Manufacturing Limited, Concord, Canada

Filed Feb. 7, 1979, Ser. No. 10,007
Int. Cl.³ D07B 3/04
U.S. Cl. 57—13 **20 Claims**



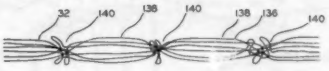
1. A strander comprising a longitudinal shaft defining the machine axis of the strander and adapted to advance a core wire along the length thereof; a support portion spaced from and generally parallel to said shaft and mounted for rotation about said axis; securing means on said support portion for securing at least one wire-carrying bobbin to said support portion in a position displaced from said shaft and with the longitudinal axis of said at least one bobbin oriented generally radially at an angle substantially normal with respect to said shaft axis; and wire payout means for guiding the wire paid off from said at least one bobbin in a generally radially inward direction around the radially innermost end thereof, thence to a point proximate to said shaft which is substantially coincident with the longitudinal axis of said at least one bobbin, without requiring the bobbins to rotate about their individual axes, and thence in a direction generally parallel to said shaft, fly-off taking place under the action of external pulling forces acting on the wires, thus enabling the wires which are paid off the bobbins to be brought to an end of said shaft and wound about the core wire.

4,253,299

BULKED AND ENTANGLED MULTIFILAMENT THERMOPLASTIC YARN

David E. Borenstein, Greenville, S.C., and Jack A. Banning, Rocky Mount, N.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 838,799, Oct. 3, 1977, Pat. No. 4,164,841.
This application May 3, 1979, Ser. No. 35,586
Int. Cl.³ D02G 3/26, 3/34
U.S. Cl. 57—246 **10 Claims**



1. A multifilament melt-spinnable plastic yarn comprising a plurality of melt-spinnable, liquid quenched plastic filaments mutually entangled by laterally oriented filaments loops penetrating between the other filaments, said filaments having a noncircular cross section; and

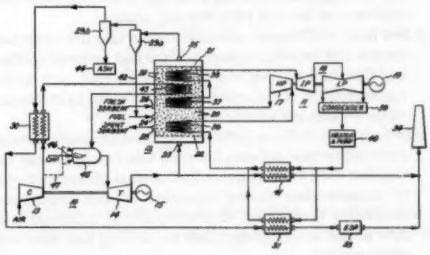
said yarn being characterized in that there are no more than about three segments of unentangled filaments of at least about 15 centimeters in length between adjacent entangled filament loops per meter of yarn on an average basis.

4,253,300

SUPPLEMENTARY FIRED COMBINED CYCLE POWER PLANTS

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,390
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.18 B **12 Claims**



1. An improved combined cycle steam turbine and gas turbine power plant of the type having a fluidized bed combustor for burning a carbonaceous fuel to provide heat energy for driving the turbines, the fluidized bed combustor including means for introduction and withdrawal of sulfur-sorbing particles to remove sulfur compounds formed during combustion, said improved power plant comprising:

(a) a gas turbine portion including at least one elastic-fluid driven turbine section and a compressor section for supplying a pressurized air stream;

(b) at least one heat exchanger means for transferring a portion of the heat energy provided by said fluidized bed combustor to said pressurized air stream;

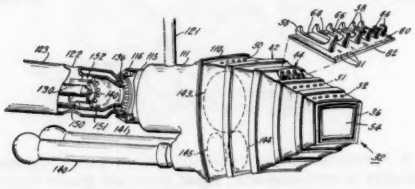
(c) means for combustion of a clean hydrocarbon fuel (CHF) to provide additional heat energy, said CHF combustion means having a first inlet for receiving the pressurized air stream from said heat exchanger means, a second inlet for receiving said CHF, and an outlet fluidly connected to said turbine section for passage of a pressurized stream of gaseous combustion products and air thereto as motive fluid therefor.

4,253,301

FUEL INJECTION STAGED SECTORAL COMBUSTOR FOR BURNING LOW-BTU FUEL GAS

Robert L. Vogt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,181
Int. Cl.[3] F02C 3/20
U.S. Cl. 60—39.46 P 11 Claims



1. A fuel injection staged combustion chamber having a main burning zone and a pilot burning zone;

said combustion chamber being operable to burn low BTU fuel gas for a gas turbine;

first fuel supply means for introducing a low thermal energy BTU fuel gas at one end, the upstream end, of said pilot burning zone;

the other end of said pilot burning zone, the downstream end, being connected to and communicating through an opening in a transverse wall at one end of said main burning zone, the upstream end thereof; the other end of said main burning zone, the downstream end, having a passage for directing the combustion products from said combustion chamber to said gas turbine;

an outer shell wall structure for said combustion chamber;

said outer shell wall comprising a first outer shell wall section for said main burning zone and a second outer shell wall section for said pilot burning zone;

a first liner wall housed coaxially within said first shell wall section and having an outer surface and an inner surface, said first shell wall section and said liner wall each having a cross-section of a shape substantially equal to an annular sector of said gas turbine;

said liner wall defining internally thereof the main burning zone and further defining between said first liner wall and said first shell wall section a first coolant channel adapted to accommodate during operation of said combustion chamber a flow of air in countercurrent relationship to flow in said main burning zone for cooling said liner wall outer surface;

air supply means for introducing air into said combustion chamber;

second fuel supply means for introducing liquid fuel selectively into the upstream end of said pilot burning zone and said combustion chamber;

a second liner wall housed coaxially within said second outer shell for said pilot burning zone;

said second liner wall defining between said second liner wall and said second outer shell a second coolant channel adapted, during operation of said combustion chamber, to accommodate a flow of air in countercurrent relationship to flow in said pilot burning zone for cooling the outer surface of said second liner wall;

the downstream end of said second coolant channel being connected to the upstream end of said first coolant channel; and

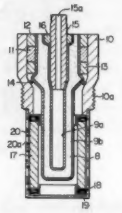
second stage fuel injection means for low BTU fuel gas, said second stage fuel injection means being connected to an additional opening in said transverse wall for direct entry into said main burning zone.

4,253,302

EXHAUST GAS PURIFYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Mitsuru Asano; Yoshihiro Segawa, both of Okazaki, and Kenji Kondo, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 5, 1978, Ser. No. 922,157
Claims priority, application Japan, Jul. 8, 1977, 52-82107
Int. Cl.[3] F01N 3/22
U.S. Cl. 60—276 16 Claims



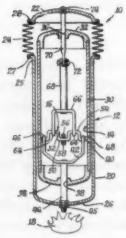
1. An exhaust gas purifying device for an internal combustion engine comprising a three-way catalyst disposed in the exhaust system of the engine, an oxygen sensor disposed upstream of said three-way catalyst in said exhaust system and including a sensing element generating an output signal varying in response to the concentration of oxygen in the engine exhaust gases, and means for controlling the air-fuel ratio at the intake side or exhaust side of the engine depending on the output signal of said oxygen sensor, wherein the improvement comprises another three-way catalyst disposed in the vicinity of said sensing element to produce around said sensing element an exhaust gas atmosphere which is substantially the same as the atmosphere in which said three-way catalyst is actually operating.

4,253,303

ENGINES, AND PARTICULARLY THOSE INCORPORATING THE STIRLING CYCLE

Jon L. Liljequist, 801 S. Elmhurst Ave., Mount Prospect, Ill. 60056

Filed Oct. 1, 1979, Ser. No. 80,566
Int. Cl.[3] F02G 1/04
U.S. Cl. 60—517 23 Claims



1. A device incorporating the general principles of the Stirling cycle, comprising:

a gas enclosure containing an entrapped gas, said gas enclosure including both a base portion and a power reciprocator, said gas enclosure defining internally thereof a variable volume expansion space and a variable volume compression space;

flexible means sealingly connecting the base portion and the power reciprocator to minimize the escape of said en-

trapped gas between the base portion and the power reciprocator yet allow relative movement therebetween;

displacer means movably contained within said gas enclosure for moving said gaseous medium back and forth between said expansion space and said compression space; and

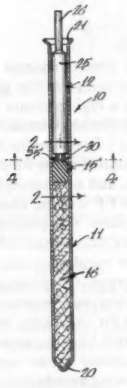
interconnecting means carried within said gas enclosure, said interconnecting means being connected both to said power reciprocator and to said displacer means for interrelating the movement of said power reciprocator and said displacer means generally in accordance with Stirling cycle characteristics.

4,253,304

THERMAL ELEMENT

W. Doyle Lamb, and Lawrence F. Luckenbill, both of Decatur, Ill., assignors to A. W. Cash Valve Manufacturing Corporation, Decatur, Ill.

Filed Jun. 23, 1978, Ser. No. 918,603
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 **8 Claims**



1. A heat-responsive thermal element comprising four parts including a tubular casing having an open end, a volume of heat-responsive expandable material positioned in said casing at a distance from the open end thereof, a motion-transmitting pin within the casing and having a portion thereof extending through the open end of the casing, and a generally spherical resilient seal member compressively positioned with random orientation in said casing between said material and said pin and free of connection to said pin for freedom of positioning and orientation to maintain a seal with said tubular casing, said seal member defining in each adjusted position an annular zone of maximum sealing force engagement with said casing substantially about the center of the seal member.

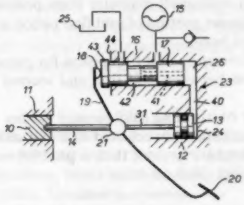
4,253,305

ASSISTED BRAKING DEVICE

Jean Louis R. Dauvergne, Survilliers, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jun. 28, 1978, Ser. No. 919,943
Claims priority, application France, Jul. 7, 1977, 77 20884
Int. Cl.³ B60T 13/20
U.S. Cl. 60—550 **6 Claims**

1. In an assisted braking device comprising a master piston mounted for sliding in a master cylinder, a jack having a piston connected to the master piston by interconnection means, a source of assisting hydraulic pressure, and a distributor adapted to feed the jack with assisting hydraulic pressure from the said source and operated in response to the actuation of pilot means comprising a pedal disposed at one end of a lever whose other end acts on the said distributor, and wherein the other end of the said lever acts directly on the said distributor; the improvement in which the lever is mounted directly by an articulation on said interconnection means, said interconnection means being continuously rigid between said jack piston and said master piston so as to form supporting means for said lever, and said other end of said lever acting on said distributor in one direction only and pushing against said distributor and



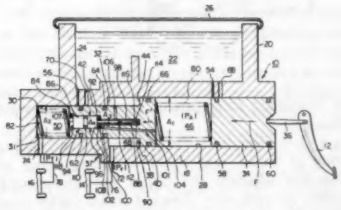
lateral fixed guide surfaces slidingly cooperating with the pedal lever for maintaining it in a substantially vertical plane, said guide surfaces being located between the supporting articulation of the pedal lever on the interconnection means and said other end of the pedal lever pushing against said distributor.

4,253,306

MASTER CYLINDER

Tadashi Kuroki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 9, 1979, Ser. No. 10,919
Claims priority, application Japan, Mar. 30, 1978, 53/37123
Int. Cl.³ B60T 11/06
U.S. Cl. 60—561 **3 Claims**



1. A master cylinder for an automotive vehicle having a brake pedal and front and rear sets of brake cylinders, comprising:

a housing having a blind stepped bore formed therein and a reservoir for hydraulic fluid in fluid communication with said stepped bore, said stepped bore having a large diameter bore section leading from the open end of said stepped bore and a small diameter portion leading from said large diameter bore section to the end wall of said stepped bore;

a first stepped piston slidably received in said stepped bore, said first piston having a small diameter portion and a large diameter portion;

a second piston slidably received in said large diameter bore portion and closing said stepped bore, said second piston being operatively connected to said brake pedal so as to be urged toward said first piston via pression of said brake pedal;

said first and second pistons defining in said stepped bore first, second and third variable volume chambers;

said first chamber being defined in said large diameter bore section between said first and second pistons;

said second chamber being defined in said large diameter bore section between the step of said first piston between said large and small diameter portions and the shoulder of

said stepped bore between said large and small diameter sections; and

said third chamber being defined in said small diameter bore section between the end of said stepped bore and the end of said small diameter portion of said first portion;

first and second biasing means disposed respectively in said large diameter bore portion between said first and second pistons and in said small diameter bore portion between said small diameter portion of said first piston and said end of said stepped bore;

passage means formed in said first piston for providing fluid communication between said first and second chambers; and

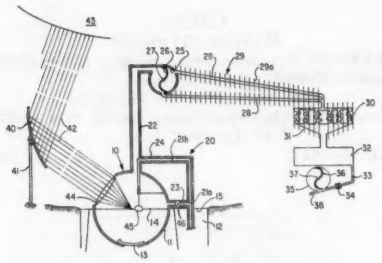
valve means for obstructing said passage means to prevent fluid communication between said first and second chambers upon a pressure greater than a predetermined value prevailing in said third chamber.

4,253,307

SOLAR POWER GENERATOR AND WATER PURIFIER

Derrick A. Smith, 1180 S. Seabreeze Blvd., Ft. Lauderdale, Fla. 33316

Filed Aug. 27, 1979, Ser. No. 70,329
Int. Cl.³ F03G *7/02, 7/04*
U.S. Cl. 60—641 **6 Claims**



1. A combined solar power generator and water purifier comprising:

(a) a hollow globular boiler floating on and anchored atop a body of water, said boiler including water inlet means disposed adjacent the upper portion of said globular boiler, an upwardly directed steam outlet conduit originating from an upper portion of said globular boiler, and a refractor lens window also disposed within an upper portion of said globular boiler;

(b) controllable means for directing the sun's rays towards said refractor lens window to generate heat, to boil water in said boiler;

(c) a primary turbine for the generation of electricity disposed at a level above that of said globular boiler, said primary turbine being connected to said steam outlet conduit and driven by steam under pressure from said globular boiler;

(d) steam condenser means connected to an outlet from said primary turbine for substantially simultaneously dissipating residual heat in said steam effluent from said primary turbine and for condensing said steam to substantially pure water;

(e) a reservoir connected to an outlet from said condenser means, said reservoir being disposed at a level lower than the level of said primary turbine, for receiving said substantially pure water;

(f) a secondary turbine for the generation of electricity disposed at a level lower than that of said reservoir, said secondary turbine being connected to an outlet from said reservoir and being selectively driven by water from said reservoir; and

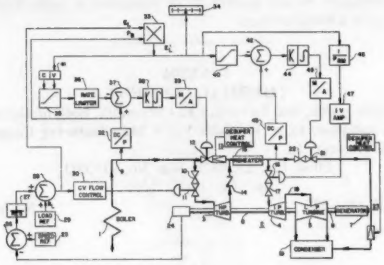
(g) pure water effluent means from said secondary turbine.

4,253,308

TURBINE CONTROL SYSTEM FOR SLIDING OR CONSTANT PRESSURE BOILERS

Markus A. Eggenberger, and Patrick C. Callan, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1979, Ser. No. 46,865
Int. Cl.³ F01K *13/00*
U.S. Cl. 60—664 **12 Claims**



1. A comprehensive control system for a steam turbine operating in conjunction with a boiler generating steam pressure, the turbine having a high-pressure (HP) section, at least one lower pressure (LP) section, a steam conduit interconnecting the HP section to the LP section through a steam reheater, at least one admission control valve for regulating the flow of steam to the HP section, and an intercept valve for regulating the flow of steam to the LP section, comprising:

an HP bypass sub-system for passing steam around said high-pressure section, said bypass sub-system including an HP bypass valve for regulating steam flow;

an LP bypass sub-system for passing steam around said lower pressure section, said bypass sub-system including an LP bypass valve for regulating steam flow;

a load and speed control loop for operating said admission control valve to maintain preset turbine speed and load, said control loop having an admission control valve position signal;

a multiplying means for providing an actual load demand (ALD) signal representing the product of boiler steam pressure and the admission control valve position signal;

an HP bypass control loop for operating said HP bypass valve to control boiler steam pressure in accord with a first reference signal determined from said ALD signal;

an LP bypass control loop for operating said LP bypass valve to control reheater steam pressure in accord with a second reference signal determined from said ALD signal; and,

an intercept control loop for operating said intercept valve in response to said ALD signal.

4,253,309

HEAT PUMP ARRANGEMENT

Thore Abrahamsson, Mardgatan 2A, Västra Frölunda, Sweden (421 71), and Kaj Hansson, Kyrkeby Västergard 63, Stenungsund, Sweden (444 00)

Filed Dec. 28, 1978, Ser. No. 974,090
Int. Cl.³ F25B *27/00;* **F25D** *17/02;* **F25B** *27/02, 13/00*
U.S. Cl. 62—2 **9 Claims**

1. A heat pump arrangement for heating purposes comprising:

heat exchanger means in the form of a vaporizer;

a compressor for compressing a vaporized medium;

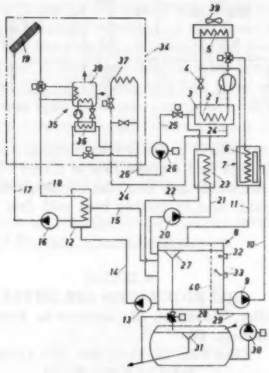
a circulation system;

condensor means for delivering heat to a heat distribution system;

said vaporizer comprising an icing machine for producing ice slush, heat generated during the ice formation being

emitted to the vaporizer, said vaporizer being connected to said circulation system;

an accumulator connected to said vaporizer, said accumulator containing water heated by at least one of solar energy, outdoor air, waste water and surface water;



spillway means for delivering ice slush from the vaporizer to said accumulator;

means for delivering water from the accumulator to said icing machine; and

means for delivering water to the accumulator for replacing the ice slush discharged therefrom.

4,253,310

METHOD AND APPARATUS FOR AIR CONDITIONING MOTOR VEHICLES

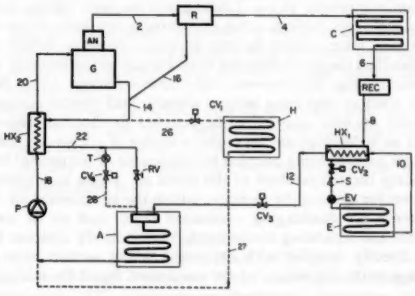
Mordechai Sokolov, Houston, Tex., assignor to Ramot University Authority for Applied Research & Industrial Develop. Ltd., Tel Aviv, Israel

Filed Mar. 6, 1978, Ser. No. 884,010

Claims priority, application Israel, Mar. 7, 1977, 51603

Int. Cl.[3] **F25B** *7/00, 15/00, 27/02;* **B60H** *3/04*

U.S. Cl. 62—79 **15 Claims**



1. A method for air conditioning a motor vehicle by selectively cooling or heating same during a cooling mode and a heating mode of operation, respectively, comprising: introducing into the vehicle engine block a concentrated solution of a solvent and a volatile refrigerant for heating same to evaporate volatile refrigerant from the concentrated solution, thereby leaving a dilute solution; utilizing the evaporated refrigerant from the engine block during the cooling mode for cooling the motor vehicle interior by condensing the evaporated refrigerant and rejecting the heat so produced external to the automobile, reducing the pressure of the refrigerant to reevaporate same and to cool thereby the motor vehicle interior, reducing the pressure of the dilute solution leaving the automobile engine block, remixing the refrigerant in the dilute solution to reconstitute the concentrated solution, repressurizing and recycling the reconstituted concentrated solution to the engine block; and utilizing the dilute solution from the engine block to heat the motor vehicle during the heating mode, by directing said dilute solution into heat-exchange relationship with the motor vehicle interior while accumulating in said condenser the refrigerant leaving the engine block.

4,253,311

CONTROL SYSTEM FOR A MOBILE ABSORPTION REFRIGERATING APPARATUS

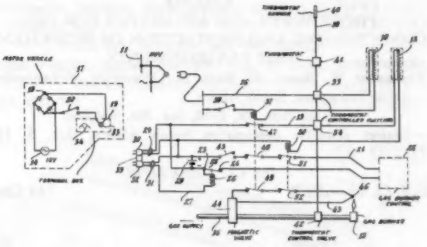
Peter E. Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jun. 18, 1979, Ser. No. 49,459

Claims priority, application Sweden, Jun. 19, 1978, 7806990

Int. Cl.[3] **F25B** *15/00, 27/00;* **B60H** *3/04*

U.S. Cl. 62—148 **8 Claims**



1. In a control system for an absorption refrigeration apparatus having a first electric heating means, gas heating means, and a gas control means for controlling said gas burner means, said gas control means including an electric circuit for igniting and maintaining a flame in said gas burner means; the improvement wherein said control system further comprises a readily separable electrical connector assembly coupled to said electric heating means for energizing said electric heating means from an external source, and means responsive to the separation of said electrical connector assembly and connected to said gas control means for enabling ignition and maintenance of a flame in said gas burner means.

4,253,312

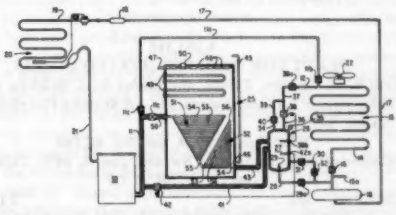
APPARATUS FOR THE RECOVERY OF USEFUL HEAT FROM REFRIGERATION GASES

Derrick A. Smith, 1180 S. Seabreeze Blvd., Ft. Lauderdale, Fla. 33316

Filed Aug. 27, 1979, Ser. No. 70,330

Int. Cl.[3] **F25B** *27/02, 13/00*

U.S. Cl. 62—238 E **5 Claims**



1. In a heat exchanger system including a condenser, an evaporator, means for circulating a compressed heat exchange

fluid between the condenser and the evaporator, and a heat extraction system connected in series with the heat exchanger system for heating an external supply of water, the improvement wherein the heat exchanger system comprises a heat exchanger unit and a master control unit; said master control unit comprising a tank having inlet means for heat exchanger fluid, control means for automatically withdrawing gaseous heat exchange fluid for admission to said condenser, control means for selectively recycling said liquid heat exchange fluid to a receiving tank, and outlet means for controllably withdrawing mixed liquid gaseous heat exchange fluid from said tank to said receiving tank; said heat exchanger comprising a main tank, col water inlet means to the bottom of the tank, hot water outlet means from the top of the tank, and a pair of series connected conical heat exchanger coils disposed in the lower half of the main tank and being connected between a compressed heat exchange fluid inlet near the mid-portion of the main tank and a cooled heat exchange fluid outlet mear the bottom of the tank, said conical heat exchanger coils, thus being connected between said compressor and said master controller.

4,253,313

PROCEDURES AND APPARATUS FOR THE CONDITIONING AND PROTECTION OF WORKMEN IN HOT ENVIRONMENTS

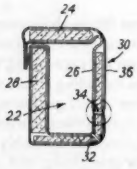
Alexander W. Rowe, 45 Burn St., Waverley, Johannesburg, 2192, Transvaal, South Africa

Filed Nov. 29, 1978, Ser. No. 964,844

Claims priority, application South Africa, Dec. 5, 1977, 77/7253

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259 B **10 Claims**



1. Cooling apparatus for workmen working in thermally stressful conditions comprising:

(a) a pocket containg ice and having a front portion, a rear portion which is adjacent to the body of the wearer, side portions and upper and lower portions, each of said portions having an inner face within the pocket and outer faces outside the pocket,

(b) insulating material forming a major part of at least the rear portion of the pocket,

(c) water impervious material lining the inner faces of the said front, rear, side and lower portions and protecting the insulating material from contact with the content of the pocket, and

(d) water conduit means guiding water through the pocket on to the body of the wearer.

4,253,314

PLANT FOR COOLING HEATED GOODS

Bertil S. V. Larsson, Tyresö, and Stefan A. J. Bokfors, Stockholm, both of Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden

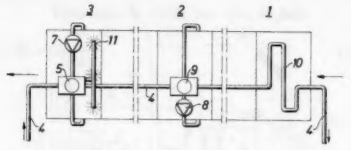
Filed Jun. 5, 1979, Ser. No. 45,740

Claims priority, application Sweden, Jun. 9, 1978, 7806733

Int. Cl.³ F25B *25/00*

U.S. Cl. 62—332 **5 Claims**

1. A plant for cooling heated goods, comprising at least one cooling section having a passage and means to transport the goods in a path through said passage and a piping system for a first heat exchange fluid which is flowing through the cooling section in a direction opposite the direction of transportation of the goods to cool the goods and heat the first heat exchange fluid by indirect heat exchange, said piping system comprising



heat exchange means, and means to circulate a separate cooling medium through said section, first in direct contact with the goods and thereafter into said heat exchange means to further cool the goods and to further heat said first heat exchange fluid.

4,253,315

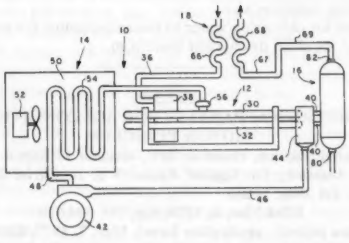
REFRIGERATED AIR DRYER

Martin Fiedler, Wooddale, Ill., assignor to Arrow Pneumatics, Inc., Mundelein, Ill.

Filed Feb. 16, 1979, Ser. No. 12,855

Int. Cl.³ F25D *17/04*

U.S. Cl. 62—404 **5 Claims**



1. An air dryer system for removing moisture from compressed air comprising: coil means including a plurality of axially spaced convoluted tubing sections, each said tubing section comprising an outer tubing and an inner tubing, said outer and inner tubings being substantially coaxially disposed with said inner tubing having an outer diameter which is smaller than the inner diameter of said outer tubing forming an annular passage therebetween and a central passage within the inner walls of said inner tubing, wherein said central passage includes an inlet adapted to be coupled to the compressed moist air to be dried and an outlet; a source of refrigerant, said annular passage being coupled to said source of refrigerant for reducing the temperature of the moist air within said tubing sections for causing the moisture within the compressed air to condense for discharging condensed liquid and air at said outlets; and separating means located immediately adjacent to and directly coupled with each said tubing section central passage outlet for removing the condensed liquid for said air.

4,253,316

SHOGGING MECHANISMS

Osmond H. Ecob, Blaby, and Bertram Johnson, Braunstone, both of England, assignors to Wildt Mellor Bromley Limited, Leicester, England

Filed Nov. 21, 1978, Ser. No. 962,808

Claims priority, application United Kingdom, Dec. 3, 1977, 50438/77

Int. Cl.³ D04B *9/10, 9/06, 15/12*

U.S. Cl. 66—14 **8 Claims**

1. In a knitting machine having a pair of relatively displace-

able needle beds and a cam system for operating the needles in the said beds, an improved shogging mechanism including:

first cam means;

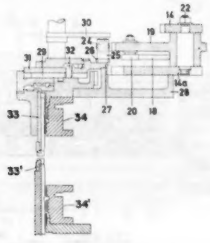
means mounting said first cam means, said mounting means being fixed in position relative to the knitting machine cam system;

lever mounting means, the position of said lever mounting means relaive to one of the needle beds being fixed;

first lever means pivotally mounted on said lever mounting means, said first lever means including a first lever having a cam follower at one end thereof, said cam follower engaging said first cam means, said first lever means further comprising resilient means urging said cam follower onto said first cam means and latching means for urging said cam follower to an inoperative position;

second lever means pivotally mounted on said lever mounting means, said second lever means including a second lever;

means for interconnecting the first and second levers respectively of said first and second lever means;



a one-way turning mechanism, said one-way turning mechanism having an input member coupled to said second lever means for movement conjointly with said second lever, said one-way turning mechanism further having an output member;

second cam means rotatably mounted on said lever mounting means, said second cam means being coupled to said one-way turning mechanism output member for movement conjointly therewith;

third lever means pivotally mounted on said lever mounting, said third lever means including a third lever having cam follower means mounted thereon at a first end thereof, said third lever means cam follower means contacting said second cam means and reciprocating said third lever to an extent determined by the profile of said second cam means; and

means coupling the second end of said third lever means lever to the other of the needle beds, said coupling means being fixed in position relative to the other said needle bed whereby the other needle bed will move conjointly with the said third lever.

4,253,317

SOCK CONSTRUCTION

Joseph W. Howard, Rockwood, Tenn., and Wayne L. Duggins, Asheboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 26, 1979, Ser. No. 33,713

Int. Cl.[3] **A41B** *11/02;* **D04B** *9/46*

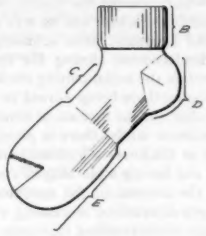
U.S. Cl. 66—186 **16 Claims**

1. A stocking comprising

a top portion comprising a mock-rib portion and having 2 x wales, wherein x is a positive integer;

an ankle and instep portion having a 1×1 mock rib with spandex being knit in every other wale to provide instep support and with terry loops having a first density formed on the interior of the ankle and instep portion;

a heel portion comprising terry loops of a second density, greater than said first density; and



a toe portion free of mock ribbing and having terry loops formed on the interior thereof.

4,253,318

MACHINE FOR TRIMMING SKINS

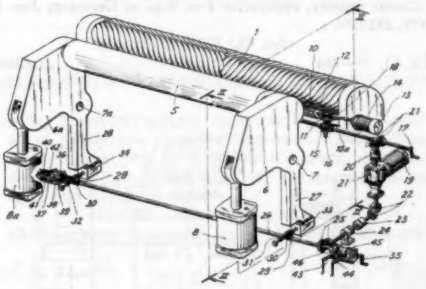
Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

Filed Sep. 24, 1979, Ser. No. 78,223

Claims priority, application Italy, Sep. 29, 1978, 28277 A/78

Int. Cl.[3] **C14B** *1/14;* **B26D** *7/06*

U.S. Cl. 69—9.1 **7 Claims**



1. A trimming machine comprising a bladed cylinder or the like of the type having the bladed cylinder placed against an opposing roller radially displaceable relative to the bladed cylinder by means of levers actuatable by cylinder and hydraulic piston units comprising a fluted roller rotatable in line with said blades, characterised in that it comprises said bladed cylinder mounted to rotate about a fixed axis and said fluted roller mounted on two end supports in turn displaceable radially relative to the bladed cylinder by means of helical gear wheels and endless screws, which gears are associated with a first control shaft actuated by means of a crank or motor in order to achieve the initial position of the fluted roller in line with the blades; there being provided at least one sensor means, connected to a support of the shaft of the fluted roller and initially positioned in line with the blades; said sensor being able to actuate, with each pre-determined reduction in the diameter of the bladed cylinder resulting from wear, a motor connected by means of a magnetic or the like clutch to said first support carrying shaft of the fluted roller, so as to achieve once more the position of the fluted roller in line with the blades; there also being provided, in order to achieve the constant initial thickness between the opposing roller and the bladed cylinder and for the increases in thickness during the process, a second control shaft positioned in parallel with the axis of rotation of the levers actuating the opposing roller and connected to said principle motor with inter-position of magnetic clutches, there being keyed on said second shaft endless screws positioned to

correspond with the levers carrying the opposing roller and in engagement with helical gears which axially actuate a screw stop associated with the box of a hydraulic valve connected to said levers carrying the opposing roller and acting on said hydraulic units which control the levers, so as to produce, upon the command of the sensor and by way of said motor, the intervention of the hydraulic units actuating the levers and hence a radial displacement closing the opposing roller in order to keep constant the initial cutting thickness also following wear on the blades; there being a crank or motor associated with said second shaft for the manual or driven position of the initial cutting thickness whilst there is provided, in order to achieve increases in thickness a hydraulic unit at one end of said second shaft and having a plurality of co-axial pistons, for imparting, upon the control of the operator, different axial displacement of pre-determined increasing value of the shaft itself so as to obtain corresponding increases in the opening of the opposing roller; there finally being provided an electronic visualising device for the initial and subsequent thicknesses, and also a differential pulse emitter associated with said second shaft, for obtaining the algebraical sum of the increases in thickness effected.

4,253,319

PNEUMATIC CENTRAL LOCKING MECHANISM FOR DOORS AND HINGED COVERS IN MOTOR VEHICLES

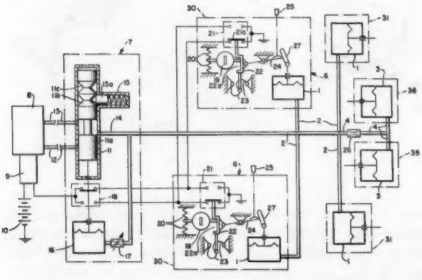
Dieter Feichtiger, Aidlingen, and Rüdiger Hoffmann, Sindelfingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 49,033

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826354

Int. Cl.³ E05B *65/38*

U.S. Cl. 70—264 **21 Claims**



1. A pneumatic central locking mechanism for controlling lock means arranged at doors and/or hinged cover means of motor vehicles, the central locking mechanism including one pneumatic operating means provided at each of the doors and hinged cover means which are to be locked by a central locking operation for locking and unlocking the locking means associated with the doors and hinged cover means, pump means for producing an excess pressure and a vacuum, an electric drive motor for driving the pump means, a reversing valve means for selectively controlling a feeding of the excess pressure and vacuum to the pneumatic operating means, switch means for controlling an activation of the electric drive motor, and at least one central locking means operatively connected to the switch means for operating the same in response to a key actuation of the central locking means, characterized in that a further pneumatic operating means controls a positioning of the reversing valve means, means are provided for pneumatically connecting the further pneumatic operating means in parallel to the pneumatic operating means provided at the doors and hinged cover means, means are provided for applying a predetermined load resistance on the further pneumatic operating means which must be overcome upon each actuation of the further pneumatic operating means, means are provided for delaying an actuation of the further pneumatic operating means until the other pneumatic operating means have been actuated, and in that the further pneumatic operating means is operable to switch a positioning of the reversing valve means, so that following a completion of a locking operation, the reversing valve means is in a position required for an opposite locking operation.

4,253,320

MAGNETIC LOCK

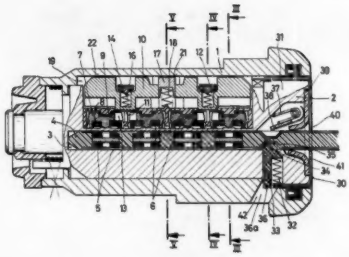
Dittmar Schwab, Rodgau; Hermann Bartels, Mühlheim, and Walter Graf, Obertshausen, all of Fed. Rep. of Germany, assignors to YMOS-Metallwerke Wolf & Becker GmbH & Co., Opertshausen, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,737

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833453

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—276 **3 Claims**



1. A magnetic locking mechanism, comprising key means including a plurality of control magnets, and locking means including lock housing means (**1**), locking cylinder means (**2**) rotatably supported in said lock housing means, locking bar means (**10**) having a locking channel (**19**) therein, said locking bar means being operatively supported for radial displacement in said locking housing means, magnetic rotor means (**6**) operatively supported in said lock housing means for locking and releasing said locking bar means, control means (**17**), spring means (**18**) operatively biasing said control means (**17**) which are supported in said housing means for displacement into said locking channel (**19**) of the locking bar means (**10**), said control means (**17**) comprising entrainment means (**20**) operatively engaging said locking bar means (**10**), and further spring means (**16**) operatively biasing said locking bar means (**10**) toward said magnetic rotor means (**6**).

4,253,321

KEY HOLDER

Peter H. Sorensen, 189-18 35th Ave., Flushing, N.Y. 11358

Filed Sep. 21, 1979, Ser. No. 77,510

Int. Cl.³ A47G *29/10*

U.S. Cl. 70—456 R **7 Claims**

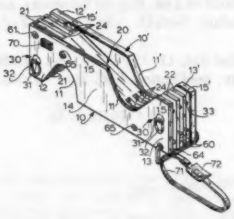
1. A key holder comprising:

a plurality of resilient, generally S-shaped key partitions arranged in a pack and generally disposed in spaced-apart, parallel relationship, each of said partitions having two opposite end portions terminating in opposite directions which are joined together by a sloping intermediate portion, said end portions of adjacent partitions defining key head-receiving slots therebetween;

a plurality of partition spacers, each of which is disposed solely between the intermediate portions of an adjacent pair of said partitions;

a pair of generally S-shaped side plates, each of which is disposed on an opposite side of said pack of partitions,

each of said side plates having two opposite end portions terminating in opposite directions which are joined together by a sloping intermediate portion, said end and intermediate portions of said side plates being in substantial alignment with said end and intermediate portions of said partitions, and said intermediate portions of said side plates extending laterally outward beyond the lateral sides of the intermediate portions of said partitions so as to define uninterrupted key bit-receiving channels on either lateral side of said intermediate portions of said partitions;



means for demountably and pivotably securing the key heads of a plurality of keys in said key slots under adjustable frictional tension so as to permit said keys to be individually pivoted under the desired degree of frictional tension between a non-operative position, in which the key bit thereof lies within said uninterrupted key bit-receiving channel, and an operative position, in which said key bit is pivoted completely out of said channel.

4,253,322

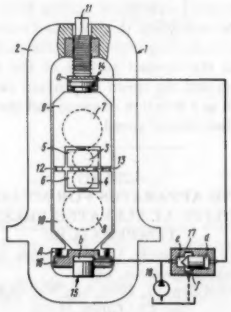
METHOD OF CONTROLLING THE THICKNESS OF STRIP STOCK BEING ROLLED

Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Vladimir G. Dukmasov, ulitsa Soni Krivoi, 77, kv. 5; Garifulla Davlyatshik, prospekt Komsomolsky, 15, kv. 100, and Sergei L. Kuznetsov, ulitsa Stalovarov, 44a, kv. 58, all of Chelyabinsk, U.S.S.R.

Continuation of Ser. No. 864,012, Dec. 23, 1977, Pat. No. 4,202,197. This application Jul. 23, 1979, Ser. No. 59,492

Int. Cl.³ B21B *37/12*

U.S. Cl. 72—245 **1 Claim**



1. A method for controlling the thickness of strip stock being rolled between rolls of a roll mill stand, comprising the following steps: creating an adjusting force causing supports of a movable roll to move, said force being greater than a rolling force and being applied to the supports of the movable roll in such a way as to displace said supports and to act against the rolling force; establishing a balancing force proportionate to the amount of movement of the supports of the movable roll to prevent said supports from being brought together and to balance the difference between said adjusting force and the rolling force, the factor of proportionality between the amount of movement of the supports of the movable roll and the balance force being in a definite predetermined ratio with a mill stand stiffness factor; and changing the adjusting force in the course of strip stock deformation to compensate for roll gap variation in proportion to the rolling force in accordance with the following formula

$$R=k_2P$$

where

R denotes the adjusting force;

P denotes the rolling force; and

k_2 can be found from the equation:

$$K=(k_1/k)+1$$

where

k_1 denotes a factor of proportionality between the amount of movement of the supports of the movable roll and the balancing force; and

k denotes the mill stand stiffness factor;

the adjusting force being varied proportionately to the rolling force by a fluid means and a valve means which serve to establish a fluid circuit between a dynamometer absorbing the rolling force and a hydraulic cylinder generating the adjusting force.

4,253,323

METHOD FOR MANUFACTURING HIGH PRECISION SLUGS

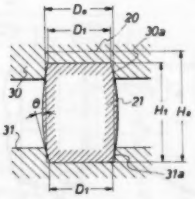
Kinshiro Murakami; Atsumu Hakoyama; Masakazu Yamazaki, all of Sagamihara; Hisanobu Kanamaru, Katsuta; Yasushi Ouchi, Ibaragi, and Akira Tohkairin, Katsuta, all of Japan, assignors to Aida Engineering, Ltd., Kanagawa and Hitachi, Ltd., Tokyo, both of, Japan

Filed Mar. 26, 1979, Ser. No. 24,036

Claims priority, application Japan, Mar. 24, 1978, 53-33136

Int. Cl.³ B21D *22/02*

U.S. Cl. 72—356 **5 Claims**



1. A method for manufacturing high precision metal slugs by the cold forming of metals which comprises subjecting a column starting material to a preforming step wherein a primary product is obtained by cold forging with a pair of upper and lower metal dies provided with concave recesses having an inner diameter substantially the same as the outer diameter of the column starting material; subjecting the resultant primary product to an upsetting step wherein the said primary product is pressed again on both ends thereof to obtain a secondary product; subjecting said secondary product to an ironing step wherein the said secondary product is smoothed by hollow dies having an inner diameter which is smaller than the outer diameter of said secondary product and substantially the same as the outer diameter of the final desired product to be produced from the resultant high precision slug.

4,253,324

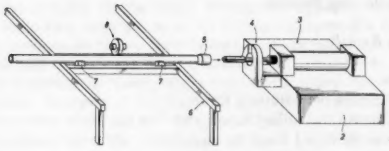
DRILL PIPE REFORMING METHOD AND APPARATUS

Jerry L. Nugent, 340 Aymar Comeaux Rd., Lafayette, La. 70508

Filed Mar. 22, 1979, Ser. No. 22,823

Int. Cl.[3] B21D *3/14*

U.S. Cl. 72—393 **36 Claims**



1. Apparatus for reforming a crushed section of a pipe member having a threaded end portion and an interior annular shoulder portion located between said crushed section and said threaded end portion, comprising

an elongate plunger member adapted for at least partial insertion longitudinally into and through said threaded end and interior shoulder portions and along the length of said crushed section of said pipe,

a plurality of shoe members shaped to form a segmented hollow and generally cylindrical assembly having a cross-sectional diameter less than the inside diameter of said pipe member at said annular shoulder portion and positionable within and along the length of said crushed section of said pipe member,

driving means for thrusting at least a portion of said plunger member through said cylindrical assembly of shoe members a preselected distance, and

a plurality of link members interconnected between said driving means and said plurality of shoe members.

4,253,325

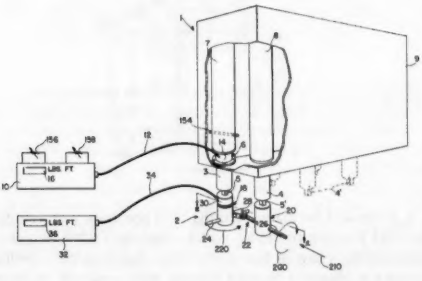
CALIBRATION OF TORQUE MEASURING TRANSDUCERS

Robert H. Reed, Lakewood, and David F. Yagger, Sinclairville, both of N.Y., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Aug. 28, 1979, Ser. No. 70,425

Int. Cl.[3] G01L *25/00*

U.S. Cl. 73—1 C **14 Claims**



13. A method for calibrating a torque measuring transducer mounted on a transducer supporting spindle within a machine tool having a plurality of spindles arranged adjacent one another, said method comprising the steps of

(a) applying a torque to the transducer supporting spindle;

(b) measuring the actual amount of torque being applied to the torque supporting spindle;

(c) transferring reactive forces resulting from step (a) to a spindle adjacent the spindle to which the torque of step (a) is applied;

(d) controlling the amount of torque applied to the transducer supporting spindle; and

(e) holding the applied torque at a fixed level to permit comparison of the results of step (b) with the output of the transducer being calibrated.

4,253,326

APPARATUS FOR DETERMINING THE PROPERTIES OF A LUBRICANT

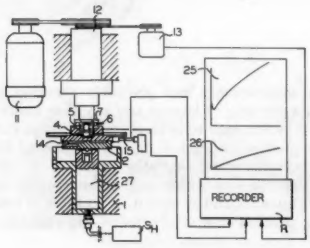
Hermann Münnich, Bad Kissingen, and Hermann Glöckner, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,650

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831158

Int. Cl.[3] G01N *3/56*

U.S. Cl. 73—10 **5 Claims**



1. Apparatus for determining the properties of a lubricant comprising an axial cylindrical roller bearing consisting of an axially spaced spindle and housing discs and a plurality of rollers in the annular space between the discs into which the lubricant to be tested is introduced, an annular member which supports the housing disc of the axial cylindrical roller bearing supported on a machine frame by means of a hydrostatic bearing cushion, means for measuring the moment of friction, a bell-shaped top which lies on and confronts the spindle disc, means for rotating the bell-shaped top, means for measuring the rotational speed of the bell-shaped top and the spindle disc, means for measuring the change in distance of the contact surfaces of the axial cylindrical rolling elements and consequently the lubricating film thickness and recording means for converting the measuring impulses of the moment of friction, the distance of the contact surface of the axial cylindrical rolling elements and the speed to provide curves of the moment of friction as a function of speed and the lubricating film thickness as a function of speed.

4,253,327

METHOD AND APPARATUS FOR MEASURING ROCK PERMEABILITY AT ELEVATED PRESSURES AND TEMPERATURE

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 17, 1979, Ser. No. 75,880

Int. Cl.[3] G01N *15/08*

U.S. Cl. 73—38 **19 Claims**

1. A method for determining the permeability of a core sample, having first and second faces, at an elevated temperature and elevated pressures comprising the steps of:

heating said core sample and a fluid to a desired temperature;

supplying said fluid under a first desired pressure to the first face of said core sample;

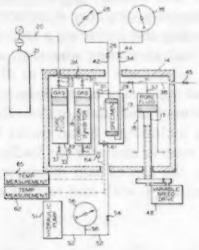
enabling said fluid to flow through said core sample at a desired, substantially constant flow rate;

applying a second desired pressure to the surface area of said

core sample, said second desired pressure being greater than said first desired pressure;

measuring the pressure of the fluid flowing to the first face of said core sample;

measuring the pressure of the fluid flowing from the second face of said core sample;



comparing the measured pressure of the fluid flowing to the first face of said core sample to the measured pressure of the fluid flowing from the second face of said core sample to determine the pressure differential across said core sample; and

calculating the permeability of said core sample based on the pressure differential across said core sample.

4,253,328

DEVICE FOR ENCLOSING A PERSON'S HEAD TO TEST A BREATHING MASK

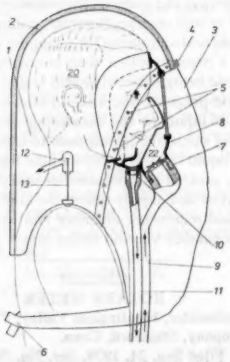
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,016

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856100

Int. Cl.³ G01M *3/20*

U.S. Cl. 73—40.7 **4 Claims**



1. A device for enclosing a person's head which is fitted with a breathing mask for the purpose of testing the sealing of the mask to the wearer's face, comprising a substantially cylindrical rigid helmet having a closed top adapted to overly the wearer's head and an open front portion adapted to be positioned in front of the wearer's face, said open front portion being bounded by a front rim, said helmet further including side wall portion and upwardly curved edges for closely engaging and supporting the helmet on the wearer's shoulders, a flexible apron having a periphery secured to said rim around at least a portion of the opening and extending downwardly from the helmet to overly the wearer's body, drawstring means associated with the lower end of said apron for engaging said apron with the wearer's body to seal the helmet, and valve means connected to said helmet for admitting a test gas into said helmet.

4,253,329

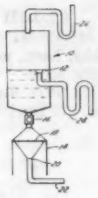
FIBRE FLEXIBILITY METER

Alkibiadis Karnis, Dollard des Ormeaux, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Nov. 9, 1979, Ser. No. 92,655

Int. Cl.³ G01N *33/00*

U.S. Cl. 73—63 **8 Claims**



1. A method for measuring the fibre flexibility of fibres comprising; screening slurry of said fibres to obtain a feed fraction having a preselected average fibre length, adjusting the consistency of the feed fraction to a selected consistency in the range of 0.05 to 0.3%, spraying said feed fraction against the bottom of a substantially horizontal screen having openings the minimum dimensions of which are substantially equivalent to a b/L ratio of 0.3 to 0.7 for a square opening screen, wherein b equals the dimension of one side of the square opening and L equals the average fibre length of the feed fraction, maintaining a negative pressure in above said horizontal screen sufficient so as to obtain a flow of slurry through said screen but without the formation of a mat beneath said screen and to divide said feed fraction into a retained and a pass fraction, obtaining a ratio indicative of a mass of fibres in the pass or retained fraction to the mass of fibres in said feed, thereby to obtain an indication of the flexibility of the fibres.

4,253,330

FUEL CONSUMPTION MEASURING APPARATUS

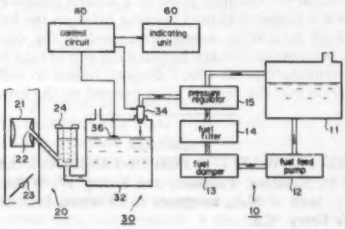
Yoshiaki Kato, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed May 18, 1979, Ser. No. 40,423

Claims priority, application Japan, Jun. 5, 1978, 53/66652

Int. Cl.³ G01F *9/00*

U.S. Cl. 73—113 **10 Claims**



1. A fuel consumption measuring apparatus for use with an internal combustion engine including a carbureter and a fuel supply system adapted to provide fuel of a regulated pressure, said apparatus comprising:

a control chamber connected at its outlet to said carbureter and provided at its inlet with fuel injection means connected to said fuel supply system

a fuel level sensor located at a predetermined position within said control chamber and having two different conditions, one established when the level of the fuel charged in said control chamber is below the predetermined position and the other established when the fuel level is at or above the predetermined position

a control circuit including a pulse signal generator and responsive to the beginning of the one condition of said

sensor for rendering said pulse signal generator operative to actuate said fuel injection means for a predetermined period of time, and

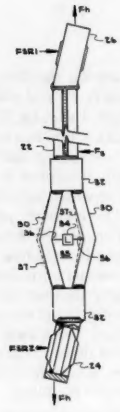
an indicator unit associated with said control circuit for counting the number of occurences of the fuel injection and indicating the result.

4,253,331

FORCE MEASURING DEVICE

Dennis R. Unruh, Wichita, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Sep. 21, 1979, Ser. No. 77,818
Int. Cl.³ G01L 1/04
U.S. Cl. 73—141 A **5 Claims**



1. A force measuring device to determine the tension force exerted on a lower link of a tractor three-point hitch comprising:

a lower link having on one end a link connection and on the opposite end a hitch connection;

a draft means forming a portion of the lower link intermediate the ends comprising a pair of bent link bars which diverge from a first juncture point and then converge from an intermediate point to a second juncture point to form a diamond-shaped opening between the bar; and

a length measuring means positioned in the opening for measuring the distance between the pair of bent bars at the intermediate point which distance relates to and is translatable into the tension force exerted on the lower link.

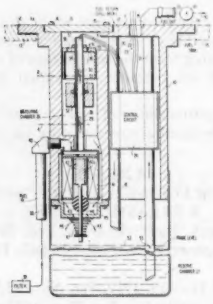
4,253,332

SEALED FLOW METER FOR IN-TANK INSTALLATION

Daniel D. Sabatino, Paramus, and Henry W. Wilkens, Little Ferry, both of N.J., assignors to Flowtron Industries, Inc., Little Ferry, N.J.

Filed Aug. 30, 1979, Ser. No. 71,159
Int. Cl.³ G01F 3/36
U.S. Cl. 73—224 **17 Claims**

1. In a liquid metering device of the type comprising a measuring chamber having a pair of liquid-level sensors therein disposed in vertically spaced relation to one another, said metering device including control means responsive to the absence of liquid in said measuring chamber at a first level determined by the lower one of said sensors for feeding a liquid to be measured from a supply of said liquid to said measuring chamber, said control means being subsequently responsive to the presence of said liquid in said measuring chamber at a second level determined by the upper one of said sensors for terminating the feeding of said liquid into said measuring chamber and for withdrawing liquid from said measuring chamber until the level of said liquid in said measuring chamber falls to said first level whereupon the withdrawal of liquid from said measuring chamber is terminated and said liquid to be measured is again fed from said liquid supply to said measuring chamber, whereby fixed increments of said liquid each of which is volumetrically dependent upon the vertical spacing between said sensors are respectively fed to and thereafter withdrawn from said measuring chamber, the improvement wherein said measuring chamber is mounted within a sealed housing, said housing also including a reserve chamber therein disposed below said measuring chamber, said control means including means selectively operable to dispense liquid from the bottom of said measuring chamber into said reserve chamber by gravity flow of said liquid out of said measuring chamber, said housing including a liquid outlet line extending into the liquid in said reserve chamber for feeding liquid out of said reserve chamber, the top of said measuring chamber always being in communication with said reserve chamber via an air



space within said housing and between said chambers whereby the pressure above the surface of the liquid in said measuring chamber is always the same as the pressure above the surface of the liquid in said reserve chamber, pumping means located exterior of said sealed housing for changing the pressure in said air space to a pressure other than atmospheric pressure, said supply of liquid being external to said sealed housing and being at atmospheric pressure, and a liquid inlet line extending from said supply of liquid to the measuring chamber within said sealed housing operative in response to a pressure differential between the liquid in said supply and the liquid in said measuring chamber, created by operation of said pumping means, to feed liquid from said supply under the control of said control means into said measuring chamber and to feed liquid out of said reserve chamber via said outlet line.

4,253,333

ROTARY METER

George W. Schneider, Huntingdon Valley, Pa., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 24, 1979, Ser. No. 78,334
Int. Cl.³ G01F 3/08
U.S. Cl. 73—253 **18 Claims**

1. A fluid meter comprising:

a casing provided with a cylindrical bore to provide a base at one end thereof and an opening at the other end thereof;

a fluid inlet and a fluid outlet spaced from said fluid inlet on said casing;

an assembly contained within said cylindrical bore and including a stationary core member, a rotor and a rotatable cylindrical gate;

said core member including a crescent shaped member that, with said cylindrical bore, defines an arcuate channel communicating with said fluid inlet and said fluid outlet;

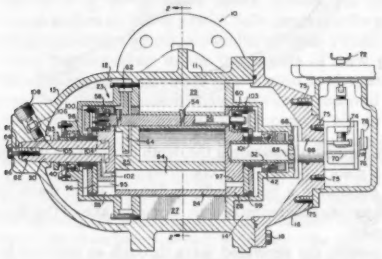
a cylindrical cavity intersecting the arcuate channel between said fluid inlet and said fluid outlet;

means rotatably mounting said rotor on said core member and said rotor having a plurality of vanes extending axially through said arcuate channel to direct flow of fluid in the arcuate channel from the fluid inlet to the fluid outlet for measurement by the meter;

said cylindrical bore having a central axis coincident with the axis of rotation of said rotor;

means rotatably mounting said rotatable gate on said stationary core with said gate located within said cylindrical cavity and having at least one pocket in the outer periphery thereof;

gear means coupling said rotor to said gate to effect synchronous rotation of said rotor and said gate to thereby assure



periodic registry of the pocket(s) and the rotor vanes as the rotor and gate rotate in said casing with said gate functioning to seal said fluid inlet from said fluid outlet;

an end cover secured to the open end of said casing;

output means coupled to said rotor and extending through said end cover;

said crescent shaped member being hollow and containing a lubricant therein; and

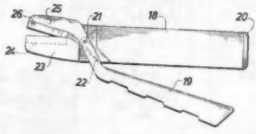
passage means to communicate said means for rotatably mounting said rotor and/or said means for rotatably mounting said gate with said hollow crescent shaped member to effect lubrication of said means for rotatably mounting said rotor and/or said gate.

4,253,334

DEVICE FOR GRIPPING AND FOR READING OF TEMPERATURE VALUES OBTAINED BY MEANS OF A TEMPERATURE MEASURING DEVICE

Hakan B. Hakansson, and Lennart P. E. Persson, both of Lund, Sweden, assignors to Gambro AB, Sweden

This PCT application filed Jun. 1, 1979, Ser. No. 131,078
PCT No. PCT/SE78/00013, § 371 Date Mar. 3, 1980, § 102(e) Date Jun. 1, 1979, PCT Pub. No. WO80/00192, PCT Pub. No. Date May 3, 1980
Int. Cl.³ G01K 7/22
U.S. Cl. 73—362 AR **19 Claims**



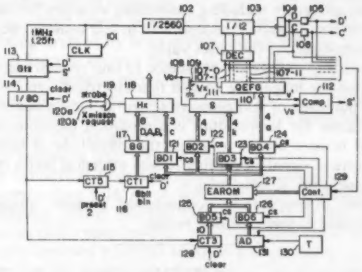
1. Apparatus adapted to grip a temperature-sensing device and to determine the value of a temperature sensed by the temperature-sensing device, which device includes a temperature-sensitive sensor having electrical properties which vary with temperature, a pair of electrical conductors, and a pair of contacts connecting the electrical conductors to the temperature-sensitive sensor, the electrical conductors terminating remote from the temperature-sensitive sensor in a pair of contact surfaces, said apparatus comprising a tong-like device having a pair of jaws; a pair of contacting means located on at least one of said jaws for contacting the pair of contact surfaces; converting means for converting a temperature sensed by the temperature-sensing device to a readable temperature value, said converting means including an electrical circuit which includes said pair of contacting means, a source of energy, and displaying means for displaying said readable temperature value when the temperature-sensing device is gripped by said tong-like device such that said pair of contacting means contacts the pair of contact surfaces, and guiding means for guiding the pair of contact surfaces into contact with said pair of contacting means, said guiding means including a substantially V-shaped groove formed on an inner surface of one of said jaws and a substantially V-shaped projection formed on the other of said jaws.

4,253,335

BAROMETRIC ALTIMETER

Naonobu Shimomura, 13-8, Sakuragaoka-cho, Shibuya-ku, Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,409
Claims priority, application Japan, Dec. 28, 1978, 53/164985
Int. Cl.³ G01L 7/00
U.S. Cl. 73—384 **26 Claims**



1. Pressure altitude measuring apparatus comprising: a pressure sensor which produces a first electrical signal representing the atomospheric pressure at the altitude to be measured and containing a pressure transducer that produces an electrical output in response to the pressure applied thereon and an output stage with a resistor circuit to compensate for the offset value of the electrical output of said pressure transducer and a resistor circuit to adjust the magnitude of said first electrical signal,

means to produce at least one kind of second electrical signals approximately equal respectively to the electrical signals which would be produced by said pressure sensor when the atmosheric pressure of at least one kind of altitude measuring reference altitudes is applied thereon,

a quasi-exponential function generator comprising a capacitor circuit with two terminals, a discharge resistor circuit with two terminals and a controller, said two terminal discharge resistor circuit comprising at least one resistor and at least one switch for said function generation and controlled to provide an effective resistance which decreases with time by means of controlling said at least one switch for said function generation by said controller, and each of said two terminals of said discharge resistor circuit is connected to each of said two terminals of said capacitor circuit,

means to generate a third electrical signal by means of charging said capacitor circuit of said quasi-exponential function generator with an electrical voltage determined in relation to the magnitude of the signal of the largest one of said at least one kind of second electrical signals, and discharging through said discharge resistor circuit for a predetermined discharging period in which said controller

controls to decrease the effective resistance of said discharge resistor circuit,

counting means to count electrical pulses of a predetermined frequency,

means to control said counting means to count said electrical pulses only during the time interval in which the magnitude of said third electrical signal is approximately not more than the magnitude of one of said second electrical signals and not less than the magnitude of said first electrical signal,

a temperature sensing device including temperature sensor, said device exhibiting plural electrical states according to the temperature of said pressure sensor and said quasi-exponential function generator,

temperature compensation means comprising at least one of the following four means;

(1) means to change the electrical capacity of said capacitor circuit of said quasi-exponential function generator including controlling switches for temperature compensation incorporated in said capacitor circuit,

(2) means to change the resistance of said discharge resistor circuit of said quasi-exponential function generator including controlling switches for temperature compensation incorporated in said discharge resistor circuit,

(3) means to change the resistance of said resistor circuit to compensate for the offset value in said output stage of said pressure sensor including controlling switches for temperature compensation incorporated in said resistor circuit to compensate for the offset value,

(4) means to change the resistance of said resistor circuit to adjust the magnitude of said first electrical signal in said output stage of said pressure sensor including controlling switches for temperature compensation incorporated in said resistor circuit to adjust the magnitude of said first electrical signal, according to said electrical states of said temperature sensing device,

wherein a temperature compensated pressure altitude is obtained in said counting means.

4,253,336

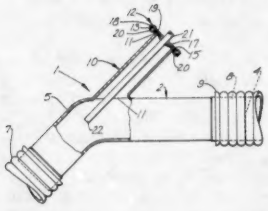
VEHICLE EXHAUST EMISSION TESTING ADAPTER

Edward E. Pietzuch, 4307 Joan Pl., Cincinnati, Ohio 45227

Filed Mar. 19, 1979, Ser. No. 21,933

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—422 R **10 Claims**



1. An adapter for use with vehicle exhaust emission testing apparatus of the type having an elongated tube-like sampling probe, said adapter comprising a hollow tube-like body member having an inlet end and an outlet end, means located at said inlet end of said member for connecting said adapter to the exhaust of a vehicle to be tested, means located at said outlet end of said member for exhausting exhaust gases from said adapter, and valve means connected to said body member, said valve means having a normally closed position for preventing escape of exhaust gases from said valve means, said valve means being configured to permit entrance of said sampling probe into said adapter while preventing escape of exhaust gases from said valve means.

4,253,337

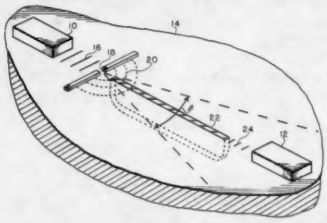
ULTRASONIC NONDESTRUCTIVE TESTING METHOD

Carmine F. Vasile, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 8, 1979, Ser. No. 64,925

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—599 **9 Claims**



9. A method of measuring the depth of a surface discontinuity in a plate type of object comprising the steps of:

(a) generating a horizontally polarized shear wave in the object directed substantially along the axis of the discontinuity;

(b) passing the generated wave through an aperture to diffract the wave prior to its arrival at the discontinuity;

(c) detecting the wave after it has propagated through the discontinuity; and

(d) calculating the depth of the discontinuity by correlating the phase and amplitude of the detected wave to the phase and amplitude of a similar wave propagated in a region of the object which is free of discontinuities.

4,253,338

ULTRASONIC DIAGNOSTIC EQUIPMENT

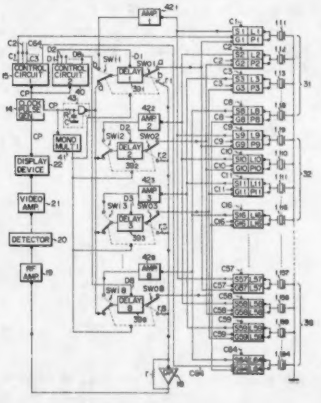
Kazuhiro Iinuma, Yokohama; Takeshi Kidokoro, Hiratsuka, and Kinya Takamizawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 27, 1977, Ser. No. 791,401

Claims priority, application Japan, Apr. 28, 1976, 51/49299

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **6 Claims**



1. An ultrasonic diagnostic equipment comprising:

a plurality of ultrasonic transducers disposed in line and divided into a plurality of groups each having a predetermined number of transducers;

a plurality of drive pulse generators each connected directly

to the corresponding one of the ultrasonic transducers, respectively, for supplying high level pulses to the respective transducers in order to transmit ultrasonic waves from the transducers;

a plurality of gate circuits connected to the drive pulse generators, respectfully, for supplying control signals to the drive pulse generators;

a plurality of analogue switch circuits connected to the ultrasonic transducers, respectively, for delivering signals received from the transducers in response to reflected ultrasonic waves;

a control circuit section for producing control signals to control the gating of the gate circuits and the switching operations of the analogue switch circuits, the control circuit section including a clock pulse generator for generating clock pulse signals, a plurality of delay circuits provided corresponding to the transducers of each group through which clock pulses are supplied to the gate circuits and through which analogue signals received from the transducers are passed, a first control circuit connected to the gate circuits for controlling the gating of the gate circuits, and a second control circuit connected to the delay circuits for controlling the delay times of the delay circuits, the first control circuit generating control signals for opening the same number of gate circuits as the number of the transducers of each group with the gate circuits to be opened being shifted one by one, whereby the delayed pulse signals passed through the delay circuits and having different phases are supplied through the open gate circuits to the corresponding drive pulse generators; and

means for processing the signals passed through the delay circuits to obtain image data corresponding to the reflected ultrasonic waves.

4,253,339

GAUGE

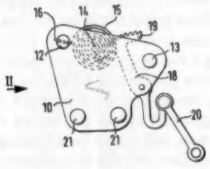
Engelbert Sellmaier, Hochwaldstrasse 2a, D-8240 Schoenau am Koenigssee, Fed. Rep. of Germany

Filed Sep. 13, 1979, Ser. No. 75,277

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 7827218[U]

Int. Cl.³ G01L *7/04*

U.S. Cl. 73—732 **8 Claims**



1. A gauge comprising

(a) a pair of bearing plates,

(b) at least two metallic spacers which at their ends are connected to either bearing plate, one of the spacers having a slot extending from one end of said one spacer towards the other end thereof,

(c) a pointer shaft rotatably mounted between the bearing plates, and

(d) a spiral spring having an inner end fixed to the pointer shaft and an outer end passing through the slot in said one spacer.

4,253,340

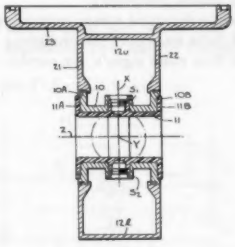
UNITARY ELECTROMAGNETIC FLOWMETER

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,181,018, which is a division of Ser. No. 771,420, Feb. 23, 1977, Pat. No. 4,098,118. This application Sep. 12, 1979, Ser. No. 75,037

Int. Cl.³ G01F *1/58*

U.S. Cl. 73—861.12 **12 Claims**



1. An electromagnetic flowmeter unit interposable between the flanged ends of upstream and downstream pipes in a line carrying a fluid whose flow rate is to be measured, the flanged ends being bridged by bolts which subject the unit to a compressive force to effect a fluid seal, said unit comprising:

A a non-magnetic metal spool to provide a flow conduit, said spool having a strength sufficient to withstand the pressure of the fluid and said compressive force, said spool having end flanges;

B an insulating liner for said spool;

C a cylindrical housing formed of ferromagnetic material surrounding said spool and concentric therewith, said housing having integral therewith at least two magnet cores of the same material which are disposed at diametrically-opposed positions along an axis normal to and intersecting the longitudinal flow axis of the spool, said housing mating with the flanges of the spool to create an inner chamber between the spool and the housing;

D coils surrounding said cores to define a pair of electromagnets; and

E a pair of electrodes mounted on said spool at diametrically-opposed positions along an axis which is perpendicular both to the flow axis and the core axis.

4,253,341

WATER METER COMPRISING A FERROMAGNETIC MAGNETORESISTOR COUPLED TO A ROTATABLE PERMANENT MAGNET

Mamoru Ikeda, Funabashi; Noboru Yamazaki, Noda; Jun Fukui, Machida; Kazuhiko Shirai, and Takesh Yano, both of Tokyo, all of Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 33,027

Claims priority, application Japan, Apr. 25, 1978, 53-49507

Int. Cl.³ G01F *1/075*

U.S. Cl. 73—861.77 **7 Claims**

1. In a water meter having a path for transmitting water which is to be measured by said meter, with said measurement being taken in terms of a predetermined unit of volume, a rotatable body positioned in said path to turn a number of times proportional to the volume of the water that flows through said path in either a normal or a reverse direction of flow, means for indicating the volume of the water used, and transmitting means responsive to rotation of said body for causing said indicating means to display the volume of the water used in terms of said predetermined unit, the improvement wherein said transmitting means comprises:

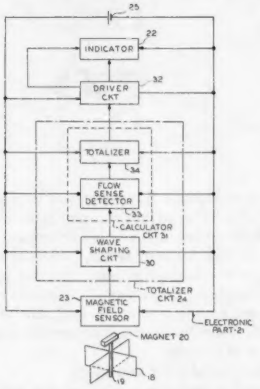
a. a permanent magnet rotatable with said rotatable body;

b. a magnetic field sensor positioned in the field of said permanent magnet, said sensor comprising first and second ferromagnetic magnetoresistive elements responsive to the rotating magnetic field of said magnet for respectively generating first and second output signals, said first and second elements producing a predetermined phase difference between said first and second output signals;

c. wave-shaping means for shaping each of said first and second output signals to form first and second sequence of pulses;

d. totalizing means comprising:

(1) flow sense detecting means responsive to said first and second pulse sequences for producing a normal and an inverse flow pulse signals, the number of pulses of said



normal flow of pulse signal and the number of pulses in said inverse flow of pulse signal being equal to twice the number of rotations of said magnet which are actually caused by the water flowing through said path in either said normal or said reverse directions, respectively; and

(2) calculating means responsive to the pulses of said flow pulse signals to produce said totalizer output signal in terms of said predetermined units of volume, said calculating means subtracting a number of pulses of said inverse flow pulse signal from a number of pulses of said normal flow pulse signal; and

e. means responsive to said totalizer output signal for driving said indicating means to display the amount of water that is used.

4,253,342

ARRANGEMENT FOR TRANSFORMING A ROTARY MOVEMENT OF A SMOOTH SHAFT INTO A THRUST MOVEMENT OF A ROLLING NUT

Joachim Uhing, Dorfstede 34, D-2300 Molfsee üb. Kiel, Fed. Rep. of Germany

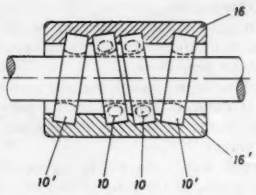
Filed Mar. 2, 1978, Ser. No. 882,938

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2709006

Int. Cl.[3] F16H *21/16*

U.S. Cl. 74—89 **10 Claims**

1. An arrangement for transforming a rotary movement of a smooth shaft into a thrust movement of a rolling nut, said rolling nut comprising a housing and, within said housing, at least one roller cage surrounding said shaft and engaging a surface section of said shaft, the end portions of said section of



engagement forming with the center of said cage a bevel angle substantially of 60°.

4,253,343

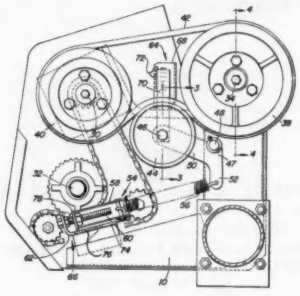
BELT DRIVE SYSTEM WITH ADJUSTABLY GAUGED TIGHTENER MEANS

Robert D. Black, Ottumwa, Iowa, and Rodney G. Koertner, Auburn, Wash., assignors to Deere & Company, Moline, Ill.

Filed Jul. 10, 1979, Ser. No. 56,367

Int. Cl.[3] F16H *7/12*

U.S. Cl. 474—135 **10 Claims**



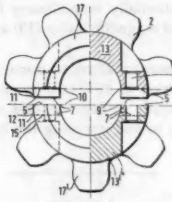
1. In a belt drive system having support means, first and second parallel shafts journaled on the support means, first and second pulleys fixed respectively on the first and second shafts, a drive belt means trained about the pulleys, belt tightening means engaging a run of the belt and mounted on the support means for selective positioning to tension the belt between the pulleys, biasing means operative between the support means and the belt tightening means for urging the latter in a belt tightening direction, and means for adjusting the biasing means to vary the force thereon, the improvement comprising: first gauge means including a pair of members carried respectively by the support means and the belt tightening means, one of said members bearing indicia and the other having an indicator readable on the indicia to show the position of the belt tightening means, and the second gauge means including a second pair of members carried respectively by the support means and the adjusting means, one of said second pair of members bearing indicia to show the state of adjustment of the biasing means, said two gauge means being so coordinated that the two readings may be compared to designate the proper force on the biasing means according to the position of the belt tightening means.

4,253,344

SPROCKET DRUM ASSEMBLY

Bodo Kerklies, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,571
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817968
Int. Cl.³ F16H 55/30
U.S. Cl. 474—96 6 Claims



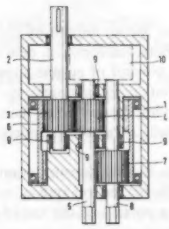
1. A sprocket drum assembly, comprising: a pair of complementary, radially separable sprocket drum assembly parts, the assembly comprising a hollow cylindrical drum and a sprocket wheel having an odd number of sprocket teeth, wherein said two parts meet along two surfaces, the inner edges of at least those portions of said surfaces associated with the drum lying in a diametrical plane of the assembly, and each of the outer edges of those portions of said surfaces associated with the sprocket wheel lying between a respective pair of sprocket teeth, and wherein each of said surfaces has a first component associated with the drum and a second component associated with the sprocket wheel, the first components lying in said diametrical plane of the assembly, and the second components lying in a plane parallel to, and offset from, said diametrical plane.

4,253,345

DISTRIBUTOR GEAR ASSEMBLY, PARTICULARLY FOR DOUBLE SCREW PRESSES

Heinrich Münster, Feucht, Fed. Rep. of Germany, assignor to Leistritz Maschinenfabrik, Paul Leistritz GmbH, Nuremberg, Fed. Rep. of Germany

Filed Jan. 9, 1979, Ser. No. 2,142
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801138
Int. Cl.³ F16H 37/06
U.S. Cl. 74—665 GA 6 Claims



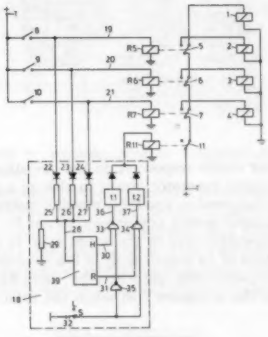
1. A distributor gear assembly comprising a housing, a driving shaft and first and second distributing shafts rotatably mounted in said housing such that the axes of said three shafts are disposed in a common plane, an annular internal gear wheel rotatably mounted in said housing, said three shafts passing through said annular internal gear wheel, each of said three shafts having a gear mounted thereon, said gear on said first distributing shaft being axially offset relative to the gear on the second distributing shaft, said gear on said driving shaft meshing with the annular internal gear wheel and with the gear on said first distributing shaft, said gear on said second distributing shaft also meshing with the annular internal gear wheel.

4,253,346

ELECTROHYDRAULIC SPEED-CHANGE DEVICE FOR A LOAD-SHIFTABLE REVERSING TRANSMISSION FOR AN AUTOMOTIVE VEHICLE

Willi Kühnle, Friedrichshafen, and Heinz Wendler, Meckenbeuren, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,142
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2700962
Int. Cl.³ F16H 5/56, 5/58
U.S. Cl. 74—861 5 Claims



1. In a system for the electrohydraulic operation of respective friction devices of a multispeed transmission to select respective speeds thereof, wherein each of said devices is connected to a respective electromagnetic valve through which the device is hydraulically filled and emptied, the improvement wherein said system comprises respective working contacts operated by respective working relays and in circuits with each of said electromagnetic valves, said working contacts being connected in a series chain with a voltage source whereby selective operation of each of the working contacts selects a respective speed by energization of a respective valve, an interrupter contact connected in a common series circuit with said source and said chain, detector means responsive to upshifting or downshifting operation of said working contacts, and timing means connected to said detector means and to said interrupter contact for open circuiting same and the series connection of the chain with its source for a predetermined time period and thereafter closing same upon operation of at least one of said working contacts by said working relays to establish an overlap between operations of said devices in the shifting from at least one speed of the transmission to another speed thereof.

4,253,347

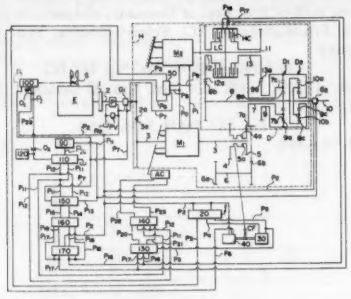
AUTOMATIC SPEED RATIO CONTROL SYSTEM FOR STEPLESS TRANSMISSION OF AUTOMOTIVE VEHICLES

Kiyofumi Mizuno, Nagoya; Hiroaki Maeda, Toyota; Shigeo Takahashi, Kariya; Masanori Sato, and Satomi Suzuki, both of Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 1, 1978, Ser. No. 930,117
Claims priority, application Japan, Aug. 10, 1977, 52/95896
Int. Cl.³ B60K 41/16, 41/06
U.S. Cl. 74—862 5 Claims

1. In an automatic speed ratio control system for a stepless

transmission of an automotive vehicle, having a target value signal generator means which produce a target value signal for controlling operation of an engine on the automotive vehicle, a detector means for producing a signal indicative of operation of the engine, a control signal generator means for comparing the signal from the detector means against the target value signal from the target value signal generator means to generate a deviation signal in accordance with a deviation therebetween



and controller means responsive to the deviation signal from the control signal generator means to change a speed ratio of the stepless transmission, and these means construct an integration servo control system comprising, means for controlling a gain of an alteration rate of the speed ratio in response to a rotational speed of an output shaft of the stepless transmission to increase the alteration rate when the rotational speed is low and decrease the alteration rate when the rotational speed is high.

4,253,348

SAFETY CIRCUIT FOR ELECTRONICALLY CONTROLLED AUTOMATIC VEHICLE TRANSMISSION

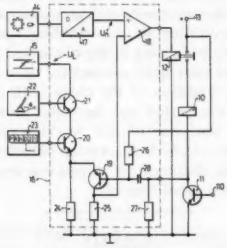
Gerhard Will, Steinheim, and Walter Stroh, Sachsenheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 27, 1977, Ser. No. 864,488

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700548

Int. Cl.[3] **B60K** *41/10*

U.S. Cl. 74—866 **5 Claims**



1. A safety circuit for an electronic control system of a vehicular automatic transmission that has at least one magnetic valve controlling the shifting of the transmission from a high gear to a lower gear, is driven by an engine of a vehicle, and is equipped with engine loading and engine speed transducers respectively for producing electrical signals representative of engine loading and engine speed, said safety circuit further comprising the improvement which consists in that:

a comparison stage (**16,18**) is provided, having a first input connected to said engine speed transducer and a second input connected in series with at least one enabling switch to the output of said engine loading transducer, and having a connection to means for indicating the position of said magnetic valve (**10**), and switching means (**12**) are connected to the output of said comparison stage, said means for indicating the position of said magnetic valve being so coupled (**27,28**) to said at least one enabling switch (**19**) so as to enable said comparison stage to switch over said switching means (**12**) in response to relative magnitude comparison of the outputs of both said transducers only during a short period of predetermined duration that substantially immediately follows a change of position of said magnetic valve (**10**) away from high gear, and

said switching means (**12**) are so connected that when they are switched over as aforesaid by said comparison stage (**16,18**) they apply voltage to said magnetic valve (**10**) corresponding to and imposing the high gear position of said valve.

4,253,349

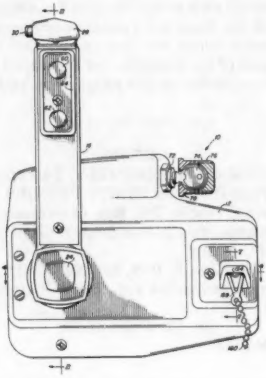
CONTROL UNIT FOR MARINE ENGINES EMPLOYING NEUTRAL LOCK MECHANISM

Larry A. Floeter, Campbellsport; Howard J. Derber, Fond du Lac, and Edwin B. Hatch, West Bend, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Mar. 5, 1979, Ser. No. 17,269

Int. Cl.[3] **B60K** *41/04;* **G05G** *9/08*

U.S. Cl. 74—878 **11 Claims**



1. A control unit for an engine of the type having a shift means for shifting between forward, neutral, and reverse and a throttle means for control of engine speeds between idle and high speed, said control unit comprising:

(a) a housing having spaced holes therein;

(b) a control handle rotatably supported at one end by said housing;

(c) linkage means in said housing connected to said engine and said handle to control one of said shift and throttle means during a portion of the arc of rotation of said handle;

(d) a lock rod extending through said handle;

(e) locking means with said rod and adjacent said one end of said handle for preventing rotation of said handle out of a position corresponding to neutral and idle throttle, said locking means including:

(1) a lock ring having at least two pins engaging two of said holes, and

(2) a slot for receiving an extremity of said lock rod prior to said axial rotation thereof; and

(f) trigger means at the outer end of said handle for axially

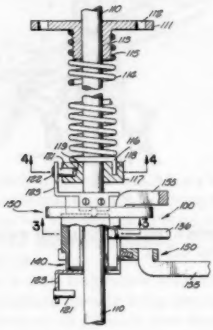
rotating said lock rod to disengage said locking means and permit rotation of said handle out of neutral and idle.

4,253,350

GARAGE DOOR SPRING TENSIONING APPARATUS

Vincent De Tarr, P.O. Box 8257, South Lake Tahoe, Calif. 95731

Filed Jan. 17, 1979, Ser. No. 4,079
Int. Cl.³ B25B *13/48*
U.S. Cl. 81—3 R **4 Claims**



1. Apparatus for tensioning a coil spring, which spring is coiled around a shaft and includes collar means, comprising in combination:

(1) a first elongated collar means; (2) a second elongated collar means rotatably mounted within said first collar means; (3) alignable openings in both of said collar means such that in combination the two collar means may be slipped over a shaft; (4) means to rotate the two collar means with reference to one another in such manner that the openings do not align so as to allow removal from the shaft; (5) means connected to said first collar means suitable to operably engage with the collar means about said shaft and attached to said spring at one end; (6) ratchet means attached to said first collar means in such manner as to rotate said first collar means with reference to the said shaft and, thus, to rotate the second collar means and tension said spring; (7) means to hold said first collar means against reversal after having been moved by said ratchet means while said ratchet means is reset for further advancement; and (8) handle means suitable to activate said ratchet means.

4,253,351

CORK EXTRACTOR

Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.

Filed Jul. 9, 1979, Ser. No. 56,281
Int. Cl.³ B67B *7/00*
U.S. Cl. 81—3.38 A **31 Claims**

1. Apparatus for extracting a cork from a bottle comprising:

a frame;

a carrier mounted on said frame for longitudinal reciprocating movement with respect to said frame;

guide means cooperative between said frame and said carrier for guiding said carrier in a longitudinal path with respect to said frame;

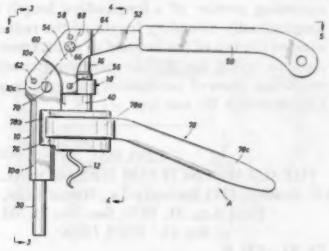
a corkscrew rotatably mounted on said carrier for joint longitudinal movement therewith, the axis of rotation of said corkscrew being generally coincident with the centerline of said corkscrew and extending generally longitudinally with respect to said carrier;

a control nut having a screw passage therethrough, said screw passage being positioned to receive said corkscrew and configured to mate with the configuration of said corkscrew whereby, upon longitudinal movement of said corkscrew in said screw passage, rotational movement will be imparted to said corkscrew;

actuator means operatively connected to said carrier for selectively longitudinally reciprocating said carrier in said longitudinal path;

means cooperative between said control nut and said frame for preventing relative rotation therebetween;

latch means engageable and releasable independently of the force of gravity for releasably latching said control nut to said frame to restrain relative longitudinal movement therebetween;



and bottle-engaging means connected to said frame for positioning a bottle with respect to said frame in longitudinal alignment with said screw passage, said bottle-engaging means being associated with said latch means and, when a bottle is engaged by said bottle-engaging means, operative cooperatively with the engaged bottle to release said latch means.

4,253,352

TOOL FOR OPENING CANS

Gilbert L. O'Neal, 18455 Biscayne Dr., Miami, Fla. 33030

Filed May 7, 1979, Ser. No. 36,411
Int. Cl.³ B67D *7/40*
U.S. Cl. 81—3.46 R **3 Claims**

1. A tool for opening cans of the type having a top surface with a central zone and a generally radially extending zone bounded by a weakened connection with the top surface of the can and which radially extending zone is adapted to be forceably broken from the top surface in response to downward pressure and to be hingedly swung into the interior of the can along a bendable hinge line adjacent the central zone and wherein the can includes a lever with a portion extending over the radially extending zone and a portion extending to a terminal end and radially away from the radially extending zone toward but not to the can periphery with the lever extending in parallel closely spaced relation to the can top and with the lever being fixed between the terminal end and the extending portion so that when the terminal end is lifted, a downward force is applied to the extending radial zone of the can top to break it from the top and to bend it into the can,

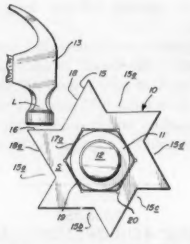
said tool comprising:

a generally sleeve shaped device having a first end and a second end and of a length at least twice that of the distance between the terminal end of the lever and the center

of the can, said tool having an upper surface and a lower surface in closely adjacent spaced generally parallel relation and side walls interconnecting the upper and lower surfaces, said tool defining a mouth and having a longitudinally extending surface extending from the mouth at said first end toward said second end, said mouth being sized to receive the terminal end of the lever and the thickness of the lower surface being less than the distance between the lever and the can top, for use in applying additional leverage to open a can;

said upper surface including at said first end a longitudinally extending portion of a longitudinal length less than the longitudinally extending length of the radially extending zone of the top of the can and of a thickness less than the distance across the radially extending zone between the weakened areas of juncture of the radially extending can top zone with the can top.

4,253,353
IMPACT WRENCH FOR HEXAGONAL NUTS
Paul P. Symbol, 1311 Barberry La., Round Lake, Ill. 60073
Filed Aug. 31, 1979, Ser. No. 71,703
Int. Cl.[3] B25B *19/00*
U.S. Cl. 81—121 R **6 Claims**



1. An impact wrench for a specific size hexagonal nut comprising a unitary metal plate having a thickness of said nut, said plate having a hexagonally shaped central aperture extending therethrough so as to ensleeve said nut, said plate being equipped with notches on the periphery thereof to provide six equally peripherally spaced impact surfaces of a size adapted to be struck by a hammer and said surfaces in succession being generally coplanar with successive sides of said nut, each notch being defined by a second surface parallel with the side of said nut adjacent to the first mentioned side.

4,253,354
HYDRAULIC CATWORKS SYSTEM
James L. Walker, 305 Yorkshire La., Victoria, Tex. 77901
Filed Sep. 12, 1979, Ser. No. 74,706
Int. Cl.[3] B25B *13/50*
U.S. Cl. 81—57.34 **9 Claims**

1. A hydraulic catworks system for use on a well drilling rig for making up and breaking out a drill string comprising,

a hydraulic makeup piston and cylinder assembly,

a makeup line connected to said makeup assembly and adapted to be connected to makeup means,

a breakout piston and cylinder assembly,

a breakout line connected to said breakout assembly and adapted to be connected to breakout means,

a makeup hydraulic control valve,

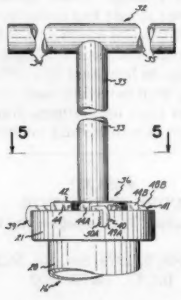
a breakout hydraulic control valve,

first and second hydraulic lines connected between the makeup assembly and the makeup control valve, said first line connected for makeup line extension and said second line connected for makeup line retraction,

third and fourth hydraulic lines connected between the breakout assembly and the breakout control valve, said third line connected for breakout line extension and said fourth line connected for breakout line retraction,

means for selectively actuating said makeup and said breakout control valves.

4,253,355
VALVE BOX ADJUSTING TOOL
Gerald J. Neppel, 1615 River Rd., East Grand Forks, Minn.
Filed May 16, 1979, Ser. No. 39,637
Int. Cl.[3] B25B *13/16*
U.S. Cl. 81—167 **18 Claims**



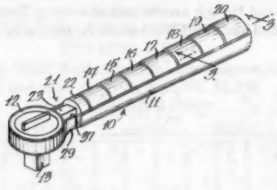
1. An apparatus for rotating a member having a wall comprising: body means attached to be rotated about an axis, and a grip mechanism secured to the body means attached to engage a plurality of separate sections of said wall to couple the apparatus to the member whereby rotation of the body means rotates the member, said gripping means including a plurality of grip means for engaging separate sections of said wall, each grip means includes a head engageable with said wall, a body having a passage, a neck extended through said passage, said neck being connected to said head, a sleeve threaded onto the neck engageable with the body to locate the head relative to the body, said sleeve being rotatable to move the head relative to the body and into engagement with said side wall, and means connecting each grip means to the body means.

4,253,356

SOCKET WRENCH WITH INTERCHANGEABLE SOCKETS STORED IN HANDLE

Werner W. Martinmaas, 3885 Picadilly Dr., Reno, Nev. 89509

Continuation of Ser. No. 909,103, May 24, 1978, abandoned.
This application Sep. 10, 1979, Ser. No. 73,966
Int. Cl.³ B25G *1/08*
U.S. Cl. 81—177 N **25 Claims**



1. In a socket wrench of the type which has a handle, a head at one end of the handle with a socket mounting stub, and a set of interchangeable socket members of different sizes which are adapted for individual selective mounting on said stub, the improvement comprising:

said handle has an arcuate longitudinal wall defining a cavity which has an entrance opening along one side;

said cavity has portions of different sizes each of which is adapted to frictionally, engage with one of the socket members of said set;

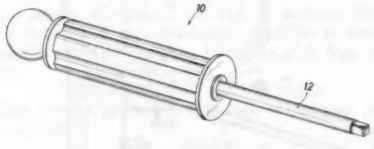
and said wall has an access opening operatively associated with each portion of the cavity permitting application of force to the socket member in said portion to remove it through said entrance opening.

4,253,357

SCREWDRIVER ACCESSORY

Don W. Lane, 8307 Leghorn St., Houston, Tex. 77040

Filed May 31, 1979, Ser. No. 44,084
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—180 R **5 Claims**



1. For cooperative use with a screwdriver or nut driver of the type wherein a shaft portion extends from a handle portion, the improvement which comprises:

(a) a reflective disk having a face portion sufficiently reflective to enable light to be reflected thereby and further including a central opening formed therein; and

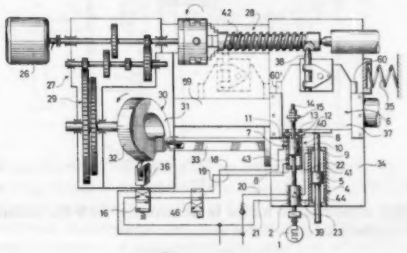
(b) resilient gripping means installed in the central opening, said resilient gripping means having an opening sealed to and sized to fit about a portion of the shaft of the screwdriver or nut driver to hold said reflective disk face at a desired location along the shaft portion thereof.

4,253,358

ELECTROHYDRAULIC FOLLOW-UP CONTROL APPARATUS

Eckehart Schulze, Weissach-Flacht, Fed. Rep. of Germany, assignor to Hartmann & Lämmle GmbH & Co., Rutesheim, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 55,308
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829911
Int. Cl.³ B23B *5/46*; F15B *21/02*
U.S. Cl. 82—5 **16 Claims**



1. In an electrohydraulic follow-up control apparatus for transmitting motion to part of a machine tool or the like, a combination comprising a connecting member adapted to be connected to the machine tool part; fluid operated prime mover means comprising a cylinder element and a piston element axially movable in the cylinder element and dividing the latter into two chambers, one of said elements being connected to said connecting member for movement therewith; control means for feeding and discharging pressure fluid into and out of said chambers to move said piston element relative to said cylinder element, said control means comprising a spindle movement and a nut component cooperating therewith, drive means for rotating one of said components to thereby move said one component in axial direction, and valve means actuated by said one component; coupling means between said other component and said connecting member for permitting limited relative movement of said other component and said one element, and including a control member movable between two abutments in said connecting member; and means for moving said control member into engagement with a respective one of said abutments.

4,253,359

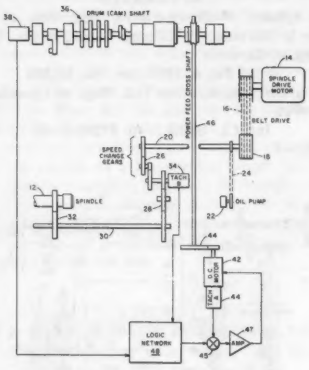
DRIVE SYSTEM FOR MULTIPLE SPINDLE MACHINE TOOL

David H. Youden, Cornish, N.H., assignor to Cone-Blanchard Machine Company, Windsor, Vt.

Filed Oct. 24, 1979, Ser. No. 87,711
Int. Cl.³ B23B *21/00, 3/00, 3/34*
U.S. Cl. 82—21 B **9 Claims**

1. In a machine tool having a drive system which includes a drive motor and at least a workpiece-holding spindle rotatably driven by said drive motor, tool-carrying cross and end slides and a drum shaft for controlling the operations upon said workpiece of said tools carried by said sliders, the combination of a variable speed direct current servo motor for driving said drum shaft, switch means positionally controlled by said drum shaft in a predetermined sequence determined by the rotational position thereof, a source of control voltage for said servo

motor and means connected between said switch means and said source of control voltage for varying the control voltage



applied to said servo motor in accordance with the instantaneous rotational position of said drum shaft.

4,253,360

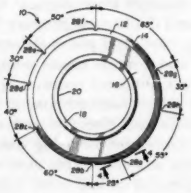
METHOD OF TRIMMING PRINTED CIRCUIT BOARDS

Gary R. Zontelli, 14617 Woodhill Ter., Minnetonka, Minn. 55343

Division of Ser. No. 877,258, Feb. 13, 1978, Pat. No. 4,167,132. This application May 14, 1979, Ser. No. 38,647

Int. Cl.³ B26D *1/14*

U.S. Cl. 83—39 **11 Claims**



1. A method of trimming printed circuit boards having a plurality of leads projecting from one side comprising the steps of relatively and progressively cutting said leads in a nonuniform or unrhythmic manner by moving a knife member formed with a cutting edge against said leads, said cutting edge having a number of unevenly spaced notches therein.

4,253,361

FULLY MECHANIZED SAWMILL

Roy R. Pryor, and Harold A. Pryor, both of P.O. Box 26, Woodville, Tex. 75979

Division of Ser. No. 747,548, Dec. 6, 1976, abandoned. This application Sep. 15, 1978, Ser. No. 942,607

The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.

Int. Cl.³ B27B *7/00*

U.S. Cl. 83—90 **5 Claims**

1. A sawmill and the like, comprising

a first deck assembly for supporting and moving sawlogs along its length;

a cutting section including a movable carriage with at least one knee assembly and a rotatable circular saw for receiving and slicing said sawlogs into salvageable slabs, ties and the like, and other salable pieces;

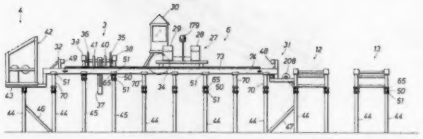
a nose section interconnecting said first deck assembly and said cutting section and having a stop-and-loader assembly for selecting and transferring sawlogs from said first deck assembly and a slapper bar means for moving said selected sawlogs to said carriage and knee assembly;

a first conveyor and trough means aligned with and extending from said rotatable circular saw;

a second conveyor and trough means aligned with and between said rotatable circular saw and said first conveyor and trough means and extending from said saw;

a third conveyor and trough means aligned with and between said rotatable circular saw and said second conveyor and trough means and extending from said saw;

first, second and third flip boards respectively and pivotally



mounted above said first, second and third conveyor and trough means;

a lumber deck assembly spaced from said saw and arranged adjacent a selected one of said conveyor and trough means;

lumber stacking means interconnected with said lumber deck assembly for receiving said other salable pieces from said selected one of said conveyor and trough means and having arcuately movable arm members; and

shifting means extending across the path of travel of said selected one of said conveyor and trough means for shifting said salable pieces onto said arm members.

4,253,362

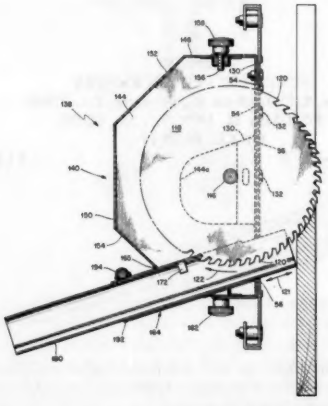
APPARATUS FOR COLLECTING SAWDUST PRODUCED BY A CIRCULAR POWER SAW

Larry E. Olson, 1149 129th Ave., NE., Blaine, Minn. 55434

Filed Aug. 13, 1979, Ser. No. 65,835

Int. Cl.³ B27B *5/29*

U.S. Cl. 83—100 **5 Claims**



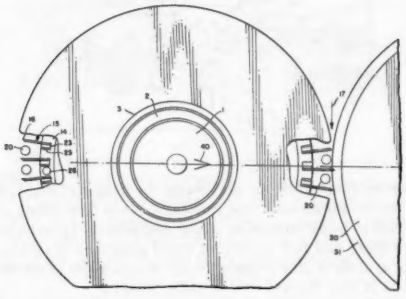
1. Dust collecting apparatus for circular power saws comprising a guard casing for enclosing a substantial portion of the power saw's circular blade, an integral sleeve fixedly attached to and supported by said casing, a tube having a circular cross section, said tube being slidably received in said sleeve so that one end of said tube can be adjustably positioned relative to said circular blade, the other end of said tube being adapted for connection to a vacuum source, said tube having a rectangular

slot extending longitudinally from said one end thereof for accommodating therein a peripheral segment of said blade and said sleeve having a rectangular slot corresponding generally to the sides of the slot in said tube, and means on said sleeve limiting longitudinal movement of said tube in the direction of said circular blade, whereby an appreciable amount of sawdust produced by said blade is directed into said tube and induced to flow therethrough by said vacuum source.

4,253,363
ROVING CUTTER WITH POSITIVE EJECTION CUTTING HEAD

Jerry R. Fram, 10627 Rochester Ave., Los Angeles, Calif. 90024

Filed Apr. 25, 1979, Ser. No. 33,156
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—114 **9 Claims**



1. In a roving cutter of the type comprising a cutting head having a cutter wheel with a set of circumferentially spaced blades projecting radially outwardly from said wheel, and an anvil member contiguous to one side of said wheel, said cutter wheel and said anvil member defining a roving cutting nip, and said cutting head also having a set of circumferentially spaced ejection elements mounted for movement, in the spaces between said blades, in an orbit having an axis eccentric to the axis of said cutter wheel so as to positively eject the cut rovings from said spaces,

the improvement

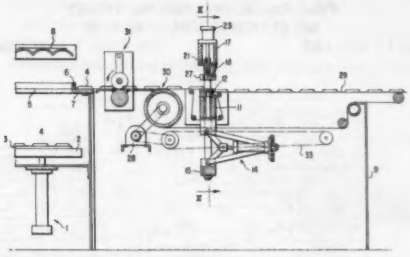
that the ejection elements are fixedly carried, under longitudinal tension by a pair of end members mounted adjacent the two ends of said cutter wheel, respectively.

4,253,364
APPARATUS FOR DISCHARGING AND SEPARATING SKIN PACKAGES

Günther Kiefer, Schwaigern, and Helmut Karbach, Frankenbach, both of Fed. Rep. of Germany, assignors to Adolf Illig Maschinenbau GmbH & Co., Heilbronn, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,022
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832365
Int. Cl.³ B65B *61/16*
U.S. Cl. 83—217 **5 Claims**

1. In an apparatus for withdrawing a continuous band of multi-article skin packages from a skin packing machine; the apparatus including clamping means for periodically grasping the band and stepwise withdrawing it from the skin packing machine in a direction of band feed; first cutting means for severing the band parallel to the direction of band feed; second cutting means for severing the band transversely to the direction of band feed; the first and second cutting means dividing each multi-article skin package into smaller packages having a reduced number of articles; punching means for providing hanger holes in the packages simultaneously with the severing operation of the second cutting means; a sled carrying the clamping means, the second cutting means and the punching means and being arranged to travel back and forth parallel to the direction of band feed; and control means for intermittently

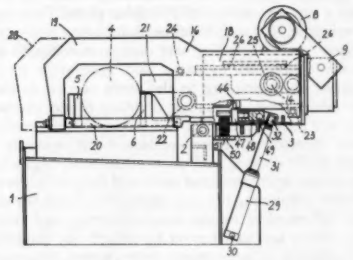


and simultaneously actuating the second cutting means and the punching means at predeterminable locations during the travel of the sled against the direction of band feed; the improvement comprising deactivating means for rendering said punching means inoperative at predeterminable positions of said sled.

4,253,365
HACK SAWING MACHINE

Mario Ragazzini, Via Montanara, 26/A, Fontanelice, (Bologna), Italy

Filed Aug. 6, 1979, Ser. No. 64,284
Int. Cl.³ B23D *51/20*
U.S. Cl. 83—755 **4 Claims**

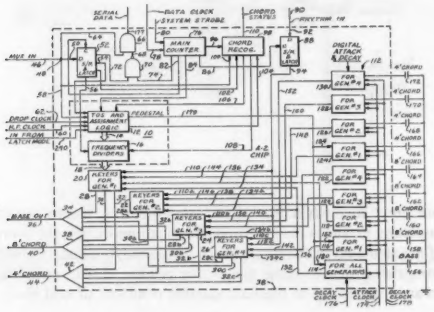


1. A hack sawing machine characterized in that it comprises a base, a vice for clamping a workpiece being mounted to said base, a case hinged to said base, a shaft carried rotatably inside said case and rotatively driven by a motor mounted to said case, a blade carrying bow slidably guided in said case in a direction parallel to said shaft, a drum cam rotatively rigid with said shaft for reciprocating said blade carrying bow back and forth through an active forward stroke and a passive return stroke, a two-arm lever journalled in said case along an axis perpendicular to said shaft, elastic means interposed between one arm of said lever and said case, a hydraulic cylinder articulated with one end to said base and with the other end to the arm of said lever opposing said one arm whereon said elastic means are active, a hydraulic circuit supplying said cylinder such as to maintain said blade carrying bow on the workpiece with a predetermined pressure during the active stroke, and camming means mounted to said shaft and acting on said lever to cause said case to be rotated and said blade carrying bow to be raised during the passive stroke.

4,253,366
LARGE SCALE INTEGRATED CIRCUIT CHIP FOR AN ELECTRONIC ORGAN

William R. Hoskinson, Geneva, and Harold O. Schwartz, Elburn, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,312
Int. Cl.[3] G10H 1/38, 1/40, 5/00
U.S. Cl. 84—1.03 11 Claims



1. For use in an electronic organ or the like, a large scale integrated circuit chip comprising a plurality of assignable frequency generators, each of which is assignable for generating electrical oscillations corresponding to any of a plurality of musical notes playable by the organ or the like, input means for receiving multiplexed information from the keyboard of an electronic organ or the like as to notes played thereon, said input means comprising latching means having input and output connections, a comparator having an output and further having two input means respectively connected to the latching means input and output connections, said comparator having a signal on said output when said latching means input connection has a greater number of multiplex pulses than appear on said latching means output connection, means interconnecting said input means including said comparator output and said frequency generators to cause said generators to produce oscillations corresponding to the notes carried in the multiplexed information, frequency dividing means connected to receive said oscillations from said frequency generators and to produce therefrom further oscillations at octavely related frequencies for playing said notes at different organ footages, keying means interconnected with said frequency dividers for selectively conducting the outputs thereof, means for receiving rhythm information, means interconnecting said rhythm receiving means and said keyers for selectively rendering said keyers effective in accordance with rhythm information received, and attack and decay circuits interconnected with said keyers for providing attack and decay characteristics thereto.

4,253,367
MUSICAL TONE FORMING DEVICE BY FM TECHNOLOGY

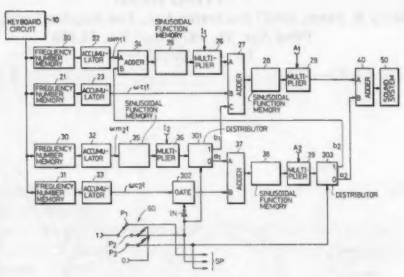
Teruo Hiyoshi; Akira Nakada, and Shigeru Yamada, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 3, 1979, Ser. No. 81,541
Claims priority, application Japan, Oct. 6, 1978, 53-123774
Int. Cl.[3] G10H 1/08, 5/00
U.S. Cl. 84—1.22 3 Claims

1. Musical tone forming device in an electronic musical instrument comprising:

a plurality of musical tone forming circuits each including a phase angle information generation circuit generating first phase angle information $\omega_m t$ which progresses time-wisely and second phase angle information $\omega_c t$ which progresses time-wisely, a first waveform signal generation circuit generating a first waveform signal $G(\omega_m t)$ which is a function of said first phase angle information, an adder adding said first waveform signal $G(\omega_m t)$ and said second phase angle information $\omega_c t$ together and a second waveform signal generation circuit generating a second waveform signal $Z\{\omega_c t+G(\omega_m t)\}$ which is a function of the output of said adder which adder output constitutes third phase angle information;

a combination circuit for combining said second waveform signals outputted by the respective musical tone forming circuits; and



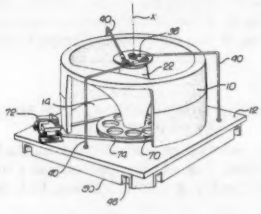
a distribution circuit for preventing the output of a specific one of said musical tone forming circuits from being applied to said combination circuit and selectively operating to apply said first waveform signal generated in said specific musical tone forming circuit to said adder of another one of said musical tone forming circuits,

two different musical tone signals being produced from the output of said combination circuit in accordance with the selection operation of said distribution circuit.

4,253,368
UNIVERSAL PULSATO UNIT

Donald J. Leslie, Altadena, and Paul H. Sharp, South Pasadena, both of Calif., assignors to Marmon Company, Chicago, Ill.

Filed Jul. 1, 1976, Ser. No. 701,638
Int. Cl.[3] G10H 1/02, 1/04; G10K 7/00, 13/00
U.S. Cl. 84—1.24 18 Claims



1. In musical apparatus cooperable with a speaker:

(a) a rotor;

(b) a shaft mounting said rotor for rotation about an axis;

(c) said rotor having an angled sound channel with a throat at one axial end cooperable with a speaker, and having a substantially radially opening mouth for producing a rotating sound radiation pattern upon rotation of said rotor;

(d) a pair of thrust bearings for the ends of said shaft;

(e) spring bias means imposing a force between said shaft ends and said bearings whereby spurious vibrations and other noises at the junction of said bearings and said shaft ends are eliminated;

(f) said shaft comprising a plurality of telescopic elements;

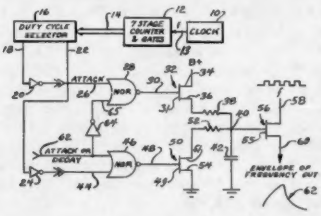
(g) said spring means being accommodated between said telescopic elements and urging said shaft elements into engagement with said thrust bearings.

4,253,369

DIGITAL CONTROL OF ATTACK AND DECAY

William R. Hoskinson, Geneva, Ill., assignor to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 20, 1978, Ser. No. 917,308
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 **3 Claims**



1. In an electronic musical instrument, the combination for effecting digital control of attack and decay comprising means for storing electrical energy, a source of substantially constant direct current potential for supplying energy to said energy storing means, first controllable switch means connected between said source and said energy storing means and having a control element means for supplying a first digital wave of controlled duty cycle and having an amplitude independent of said direct potential, a clock duty cycle means connected to said clock including a counter and a plurality of gates providing a plurality of outputs of different duty cycles, player controlled means connected to said duty cycle means for selecting a desired duty cycle for said first digital wave, means for selectively connecting said first digital wave to said control element at said selected duty cycle to control the rate at which energy is supplied to said storing means, second controllable switch means connecting between said storing means and a reference potential and having an amplitude independent of said direct current potential, further player controlled means connected to said duty cycle means for selecting a desired duty cycle for said second digital wave, means for selectively connecting said second digital wave to the control element of said second controllable switch means at said selected duty cycle to control the rate at which said storage means discharges, means providing an electrical wave corresponding to a desired musical tone, and a third controllable switch means to which said musical tone electrical wave providing means is connected, said third controllable switch means having a control element to which said electrical energy storing means is connected for controlling the passage of said musical tone electrical wave through said controllable switch means to determine attack and decay of said wave.

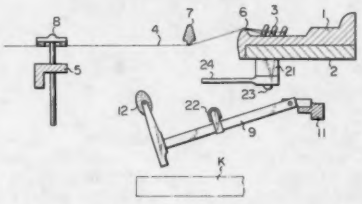
4,253,370

KEYBOARD MUSICAL INSTRUMENT

Eiji Kobayashi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jun. 12, 1978, Ser. No. 914,390
Claims priority, application Japan, Jun. 17, 1977, 52/71770; Aug. 5, 1977, 52/105042[U]; Aug. 5, 1977, 52/105043[U]
Int. Cl.³ G10C *5/00;* G10D *13/08*
U.S. Cl. 84—198 **11 Claims**

1. Improved keyboard musical instrument comprising:
a main vibratory tone generator arranged on said instrument;
an auxiliary vibratory tone generator arranged on said instrument separately from said main tone generator;
a main hammer mounted on a swingable hammer shank for striking said main tone generator for tonal vibration of said main tone generator;
an auxiliary hammer mounted on said swingable hammer shank for striking said auxiliary tone generator for tonal vibration of said auxiliary tone generator;
means for operationaliy coupling said hammer shank to an associated key, whereby operating the key swings said hammer shank and
means for selectively displacing said auxiliary tone generator



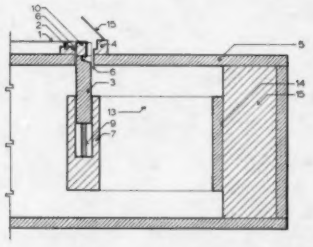
to any of three different positions so that only said main hammer is allowed to strike said main tone generator when said auxiliary tone generator assumes a first one of said three positions, said main and auxiliary hammers are allowed to strike said respective main and auxiliary tone generators when said auxiliary tone generator assumes a second one of said three positions, and only said auxiliary hammer is allowed to strike said auxiliary tone generator when said auxiliary tone generator assumes a third one of said three positions.

4,253,371

CARRIER/SADDLE STRUCTURE FOR STRINGED MUSICAL INSTRUMENTS

Ronald H. Guice, 3725 Broadmor Rd., Huntsville, Ala.

Filed Sep. 10, 1979, Ser. No. 73,922
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—267 **3 Claims**



1. An improved carrier/saddle structure for coupling strings to the sound box of a stringed musical instrument which comprises;
(a) a conventional sounding board structure, forming a surface of the sound box, which is modified to include an aperture;
(b) a saddle attached to the said sounding board having an aperture aligned with and complimentary to the aperture of said sounding board;
(c) a carrier structure secured to the interior of the sound box independent of the said sounding board having an attachment member, which extends through the aperture contained in the said sounding board and said saddle, to which the strings are attached;
(d) A bridge affixed to the said saddle in contact with the strings.

4,253,372

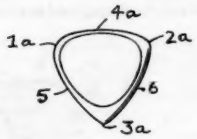
T-3.TRIPLE THICK TRIPLE TIP PICK

David E. Filipetti, 175 B Ann St., Hartford, Conn. 06103

Continuation-in-part of Ser. No. 897,343, May 18, 1978, abandoned. This application May 14, 1979, Ser. No. 38,635

Int. Cl.[3] **G10D** *3/16*

U.S. Cl. 84—322 **6 Claims**



1. A pick for a stringed musical instrument, comprising: an integral body made of a completely rigid material, said body having a thickness of three millimeters, plus or minus fifteen percent, and having at least three picking tips, each of said tips having a different combination of tip shape and tip taper than the remaining tips, and said each tip being located such that only one tip may be used at any one time.

4,253,373

TUNING DEVICE FOR MUSICAL INSTRUMENTS

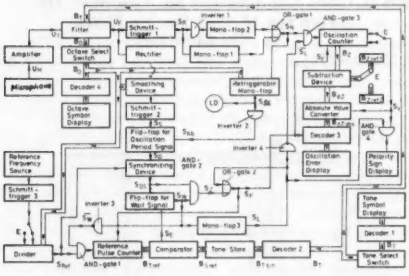
Reiner Foerst, Gummersbach, Fed. Rep. of Germany, assignor to Dr.-Ing. Reiner Foerst GmbH, Gummersbach, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 958,248

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750121

Int. Cl.[3] **G10G** *7/02*

U.S. Cl. 84—454 **4 Claims**



1. A device for the measurement of the number of cycles or half cycles of a tone during a preset reference time including a microphone, an amplifier, a filter for the prevention of zero transits extraneous to the fundamental tone oscillation, a Schmitt-trigger for the conversion of the filtered tone frequency voltage U_F into a digital oscillation signal S_R, two mono-flops for the conversion of the digital tone oscillation signal S_R into a zero transit signal S_N, a flip-flop for the oscillation period signal S_D which is set via a rectifier, a smoothing device, and a Schmitt-trigger by the increasing amplitude of the filtered tone frequency voltage U_F and which is reset by an inverted oscillation existance signal S_{SE}, a synchronizing device, a reference frequency source, a reference pulse counter, and an oscillation counter to which the zero transit signal S_N is supplied via an AND-gate, said device comprising in combination therewith a tone store in which the values for the tone cycle lengths B_{Sref} are stored, and which is addressable from a tone select switch via a decoder, and also comprising in combination therewith a comparator supplying a counting period end signal S_E when the output B_{Tref} of the reference pulse counter and the stored cycle length value B_{Sref} are equal, electronic swtiches for the selection of the harmonics filters which are controlled by the tone select switch and additionally by an octave select switch according to the tone to be tuned, a display means for the symbol of the selected octave which is controlled via a decoder by said octave select switch, a smoothing device for the setting of the flip-flop for the reference period signal by the increasing tone amplitude, the time constant of said smoothing device being adjustable by said octave select switch, a retriggerable mono-flop the input of which is the zero transit signal S_N of the tone oscillation and the output of which is the oscillation existence signal S_{SE} for the resetting of the flip-flop for the oscillation period signal S_D, a flip-flop supplying a wait signal S_W which is set by the counting period end signal S_E and reset by the output S_{DS} of the synchronizing device, an AND-gate, one input of which is the inverted wait signal S_W, the second input of which is the reference pulse signal S_{Ref} and the output of which is supplied to the reference pulse counter, and an AND-gate, one input of which is the wait signal S_W, the second input of which is the synchronized oscillation period signal S_{DS}, and the output of which supplies a counting period signal S_Z, a monoflop the input of which is the wait signal S_W and the output of which supplies a read signal S_L, an AND-gate, one input of which is the inverted read signal S_L, the other input of which is the zero transit signal S_N and the output of which is supplied to the input of the oscillation counter and an OR-gate, one input of which is the read signal S_L, the other input of which is the counting period signal S_Z, and the output of which supplies an enable signal S_F for the oscillation counter.

4,253,374

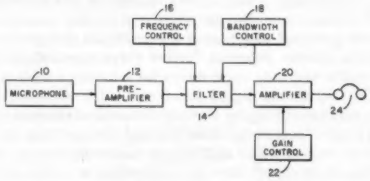
METHOD AND APPARATUS FOR PIANO TUNING AND TEMPERING

Peter C. Watterman, 8 Baron Park La., Apt. 26, Burlington, Mass. 01803

Filed Dec. 7, 1978, Ser. No. 967,275

Int. Cl.[3] **G01G** *7/02;* **H03B** *21/01;* **G01R** *23/14*

U.S. Cl. 84—455 **18 Claims**



1. For use in tuning a musical instrument wherein two notes of a tuning chain are sounded, one of which is already tuned and the other of which is to be tuned, these notes being of predetermined musical interval and each note having overtones which interact with the overtones of the other note, and beat notes produced by predetermined overtones of the two sounded notes, one of these beat notes being the intended beat note for the particular two notes which are sounded, apparatus comprising:

a first transducer for receiving the two notes being sounded including their fundamental tones, overtones and beat notes produced by the overtones, and providing an electrical signal representative thereof;

filter means operative in response to the electrical signal to pass essentially only the intended beat note produced by predetermined overtones of the associated two sounded notes, and to exclude the fundamentals, other overtones and spurious beat notes produced by the sounded notes, said filter means providing a filter output signal representing essentially only the intended beat note; and

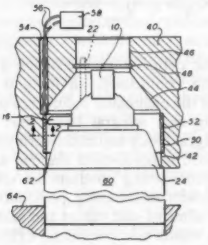
a second transducer operative in response to the filter output

signal to provide an audible rendition of essentially only the intended beat note for audible reception to permit adjustment of the rate of the intended beat note and thereby adjust the note being tuned.

4,253,375
LOADING HEAD

Werner Field, Rockaway, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1979, Ser. No. 66,600
Int. Cl.[3] C06B *21/00*; F42B *13/48*
U.S. Cl. 86—1 R **12 Claims**



1. A loading head for pressing an explosive container, said container having a transverse safety slider, said slider being movable from a retracted position to an armed position, said loading head comprising:

a placing member having at least one cavity sized to engage said explosive container and to encircle said slider;

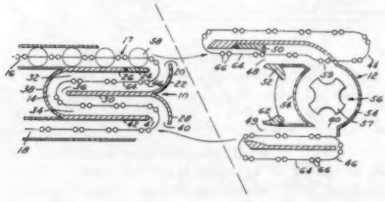
an annular switching device mounted in said cavity in a position to encircle said engaged explosive container and its slider, said switching device being actuated in response to said slider moving from said retracted position into mechanical contact with said switching device; and

utilization means responsive to actuation of said switching device.

4,253,376
TERMINATION ACCUMULATOR

William J. Washburn, Capistrano Beach; Clifford E. LaFever, Mission Viejo, and Hugh B. Thompson, Santa Ana, all of Calif., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 24, 1979, Ser. No. 42,161
Int. Cl.[3] F41D *10/04*
U.S. Cl. 89—33 BB **6 Claims**



1. In an automatic machine gun having a feed system for feeding ammunition to at least one firing chamber,

a supply conveyor section for supplying ammunition to the feed system, and a trigger mechanism for actuating said gun, the improvement comprising:

a bypass means to receive ammunition from said supply conveyor section;

a gating means operably moveable between two positions;

said gating means constructed for allowing ammunition to pass from the supply conveyor section to the feed system when in the first position and for diverting ammunition from the supply conveyor section to the bypass means thereby preventing live ammunition from entering the feed system when in the second position;

means for moving the gating means to the first and second positions;

said trigger mechanism operably connected to said moving means for positioning said gating means in its second position upon release of said trigger mechanism;

means for continuing forward operation of the feed system upon release of said trigger mechanism until all ammunition in the feed system has been fired;

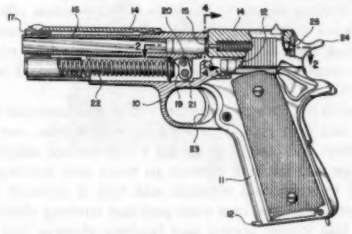
said bypass means having sufficient capacity to accommodate ammunition diverted therein from said supply conveyor section while the ammunition in the feed system is being fired after release of said trigger mechanism;

the supply conveyor section constructed for continuing forward movement when the gating means is moved to its second postiion to supply ammunition to the bypass means during forward operation of the feed system until all ammunition therein has been fired.

4,253,377
FIREARM OF INTERCONVERTIBLE CALIBERS

Perry J. Arnett, 97 S. 100 East, Parowan, Utah 84761

Filed Oct. 13, 1978, Ser. No. 951,030
Int. Cl.[3] F41D *11/00*
U.S. Cl. 89—163 **4 Claims**



1. An interconvertible sub-caliber automatic pistol of the breech block type comprising the frame, handle, single pieced slide, ejector and firing mechanism of a larger caliber pistol interconnected with,

(a) an interchangeable barrel of a sub-caliber slidably mounted in the slide and detachable secured to the frame by a pivotal connecting link,

(b) an interchangeable barrel bushing detachable mounted into the forward end of the slide and appropriately sized to surround and support the forward end of the sub-caliber barrel,

(c) an interchangeable recoil spring in the forward end of the slide below the barrel interposed between the front end of the slide and the frame sufficiently tensioned to hold the slide and barrel in a forward position but which allows the slide and barrel to recoil in the normal manner upon the firing of a sub-caliber cartridge thereby ejecting the fired cartridge, cocking the firing mechanism and reloading another cartridge into the chamber of the barrel, and

(d) an interchangeable magazine adapted to hold sub-caliber cartridges mounted in the handle.

4,253,378

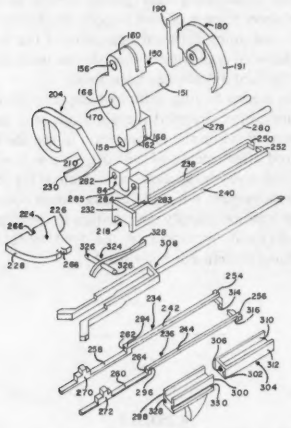
GAS OPERATED AUTOMATIC WEAPON

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Division of Ser. No. 874,114, Feb. 1, 1978, Pat. No. 4,210,060, which is a continuation-in-part of Ser. No. 829,716, Sep. 1, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,463

Int. Cl.[3] F41D *3/00*

U.S. Cl. 89—188 9 Claims



1. In a dual mode actuation system for an automatic gas operated weapon of the type having a reciprocable bolt and means for locking the bolt in position during firing, said locking means including:

an oscillating latching element adapted to be oscillated by said locking means to move to a first position allowing rearward movement of said bolt through and past said latching element and a second position in which relative movement of said bolt past said latching element is prevented;

cam means including a cam plate and at least one cam member, said cam plate supported on said at least one cam member, said cam plate having a cam surface adapted to engage said latching element to move said latching element to a position whereat said bolt is released upon movement of said cam plate past said latching element;

spring bias means urging said latching element into said second position whereat said bolt is locked against travel relative to said latching element;

whereby whenever said cam plate is positioned to allow said latching element to move toward said second position, said spring bias means moves said latching element towards said second position;

a camming fork and means moving said camming fork in response to generation of said gas pressure in said weapon;

compression spring means interposed between said camming fork and a portion of said cam member, said compression spring means operable in response to movement of said camming fork to exert a force on said cam plate tending to move said cam plate surface to as to force said latching element towards said first position;

a manual actuation slider independently movable into positive engagement with a portion of said cam member operable to move said cam plate to force said latching element to said first position upon manual manipulation of said manual actuation means whereby said cam member may be alternatively operable by said pressure during automatic fire of said weapon or alternatively by manual actuation positively engaging said cam member.

4,253,379

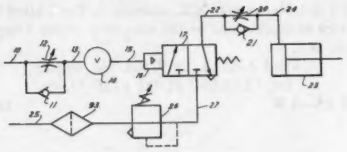
FLUID CONTROL SYSTEM

Paul E. Olson, Lexington, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,834

Int. Cl.[3] F15B *21/02*

U.S. Cl. 91—35 4 Claims



1. A pneumatic cylinder for producing a controlled piston rod reciprocation comprising, an integral block forming a transverse end of the pneumatic cylinder, a plurality of parallel plates overlaying said integral block and fastened sealably thereto, said integral block and said overlaying plates having a plurality of aligned bores formed therein, said bores forming valves and interconnecting conduits for said valves, at least one of said conduits establishing pneumatic communication between at least some of said valves and said pneumatic cylinder, two pistons within said pneumatic cylinder, each longitudinally spaced from the other, one of said pistons being disposed adjacent to said integral block and having a piston rod connected thereto, said piston rod having a longitudinal bore formed therein to establish pneumatic communication between said communicating conduit and said other piston, said other piston also being spaced from said integral block, a partition separating said pistons from each other being interposed therebetween in order to establish two separate chambers within said pneumatic cylinder, and two adjustable chokes in said valves one of said chokes regulating the speed with which the pneumatic cylinder piston rod moves in a first direction, the other of said chokes, regulating the length of time that the piston rod remains moved in said first direction.

4,253,380

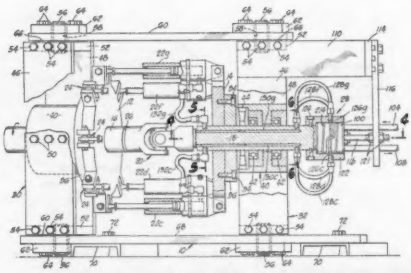
ROTARY MANIFOLD VALVE MECHANISM

David P. McConnell, P.O. Box 591, Minden, Nev. 89423, and Louis E. Tully, LaCanada, Calif., assignors to David P. McConnell, Fallon, Nev.

Division of Ser. No. 654,763, Feb. 3, 1976, Pat. No. 4,122,757. This application Sep. 5, 1978, Ser. No. 939,848

Int. Cl.[3] F16K *11/07;* F01B *13/02*

U.S. Cl. 91—503 9 Claims



1. A rotary valve mechanism for sequentially connecting a plurality of fluid flow ports with a fluid inlet and a fluid outlet, comprising:

(a) a valving element having connections respectively with said fluid inlet and said fluid outlet;

(b) a manifold element operably associated with said valving element and mounting said flow ports, said valving ele-

ment and said manifold element being in concentric relatively rotatable relation;

(c) driving means for rotating one of said elements with respect to the other of said elements;

(d) both the valving element and the manifold element being of cylindrical configuration, the valving element being provided with a pair of radial, circumferentially extending arcuate recesses having their opposite adjacent ends in spaced relation; one of said recesses being in communication with said fluid inlet, and the other of said recesses being in communication with said fluid outlet;

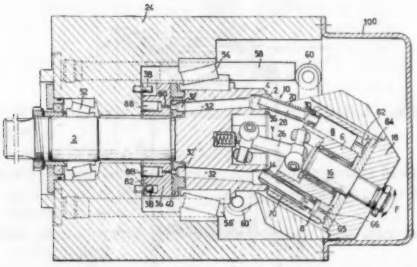
(e) circumferential sealing means extending between the valving element and the manifold element to sealingly isolate said recesses from one another, the sealing means including a continuous sealing ring disposed with a first section extending in parallel spaced relation along one side of one of the recesses, a second section extending in parallel spaced relation along the other side of the other of the recesses, and cross-over portions extending between the spaced adjacent ends of the recesses; the first and second sections of the continuous sealing ring being respectively arranged along planes which are spaced apart from each other and are axially inclined relative to an axis of relative rotation for the valving element and manifold element, the cross-over portions of the sealing ring being generally parallel to the axis of relative rotation for the valving element and manifold element; and a pair of seals respectively on opposite sides of said recesses and said continuous sealing ring, said seals being axially inclined relative to the longitudinal axis of the valving element.

4,253,381

HYDRAULIC MACHINE OF THE MULTICYLINDER DRUM TYPE

Claude Wartelle, Gouvieux, France, assignor to Centre Technique des Industries Mechaniques, Senlis, France

Filed Jun. 4, 1979, Ser. No. 45,240
Claims priority, application France, Jun. 2, 1978, 78 16506
Int. Cl.³ F01G *13/02*
U.S. Cl. 91—506 **9 Claims**



1. A hydraulic machine of the multicylinder drum type having a variable cylinder capacity, the machine being of the split-shaft kind and comprising:

a machine frame;

a shaft rotatably mounted in the frame;

a rotatable drum having a plurality of cylinders and an inclination which can be varied relative to the shaft;

a drive plate rigidly secured to the shaft with one surface facing the drum, the one surface being formed with a plurality of spherical sockets and a liquid flow duct being pierced through the plate to the opposite surface thereof from the base of each spherical socket;

a synchronisation joint interconnecting the drive plate and the drum;

piston and rod units each having a piston head received in a respective cylinder of the drum and a rod end pivotally received in a respective spherical socket of the one surface of the drive plate, each piston and rod unit being hollow and comprising a longitudinal liquid flow duct extending from the rod end to the piston head of the unit;

a distribution plate which is fixed in rotation and extends around the shaft and against which the said opposite surface of the drive plate bears, the distribution plate being pierced with at least one liquid flow orifice opposite which the liquid flow ducts of the drive plate terminate; and

means defining a stationary liquid flow conduit connected to each orifice of the distribution plate;

in which machine the improvement comprises:

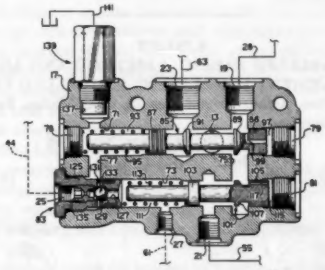
the shaft being rotatably mounted in the frame by at least one mechanical abutment which fixes the axial position of the shaft and the said opposite surface of the drive plaate in the frame; and said non-rotatable distribution plate being mounted in an axially floating condition around the shaft and being arranged so that, during operation of the machine, a hydraulic thrust bearing established between the said opposite surface of the drive plate and the adjacent face of the distribution plate, the said hydraulic thrust bearing reducing the force to which the mechanical abutment is subjected.

4,253,382

STEERING VALVE ASSEMBLY FOR STEERING AND BRAKE SYSTEM

James K. Yip, Richfield, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 7, 1979, Ser. No. 73,164
Int. Cl.³ F15B *11/16*
U.S. Cl. 91—516 **8 Claims**



1. A flow control valve assembly for use in a system including a source of pressurized fluid, a first priority load circuit having means providing a first load signal, a second priority load circuit including a variable flow control orifice, and an auxiliary load circuit, said flow control valve assembly comprising:

(a) a valve housing means defining first and second valve bores and a priority fluid chamber, each of said first and second valve bores being in fluid communication with said priority fluid chamber;

(b) said valve housing means further defining an inlet fluid port adapted for connection to said source of pressurized fluid, a first priority outlet port for connection to said first priority load circuit, a second priority outlet port for connection to said second priority load circuit, and an auxiliary outlet port for connection to said auxiliary load circuit, said inlet fluid port and said auxiliary outlet port being in open fluid communication with said first valve bore, said first priority outlet port being in open fluid communication with said priority fluid chamber and said second priority outlet port being in open fluid communication with said second valve bore;

(c) a first valve member movably disposed in said first valve

bore, means biasing said first valve member toward a position permitting substantially all fluid to flow from said inlet fluid port to said priority fluid chamber, and means communicating a first pressure signal representative of the fluid pressure in said priority fluid chamber to exert a force biasing said first valve member toward a position permitting substantially all fluid to flow from said inlet fluid port to said auxiliary outlet port;

(d) a second valve member movably disposed in said second valve bore, means defining orifice means operable to throttle the fluid pressure of fluid flowing from said priority fluid chamber to said second priority outlet port to provide one of (a) a generally constant pressure differential across said flow control orifice of said second priority load circuit, and (b) a generally constant rate of fluid flow through said orifice means; means biasing said second valve member toward a position to increase said rate of fluid flow, said biasing means including a second load signal representative of the load on the second priority load circuit, and means communicating a second pressure signal to exert a force biasing said second valve member toward a position to decrease said rate of fluid flow, the pressure of said second pressure signal being representative of the fluid pressure upstream of said variable flow control orifice; and

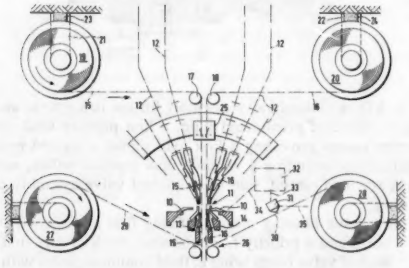
(e) said valve housing means defining load signal port means for connection to said first load signal and said second load signal and including shuttle valve means for communicating the higher of said first and second load signals to exert a force biasing said first valve member toward said position permitting substantially all fluid to flow from said inlet fluid port to said priority fluid chamber to provide a flow into said priority fluid chamber sufficient to satisfy the simultaneous demand of the first and second priority load circuits.

4,253,383

LABELLED FABRIC, A METHOD AND AN ARRANGEMENT FOR MAKING A LABELLED FABRIC

Manfred Noe, Arthur-Grimm-Weg 28, 6933 Mudau, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,408
Int. Cl.³ B31B *19/00*
U.S. Cl. 493—200 **11 Claims**



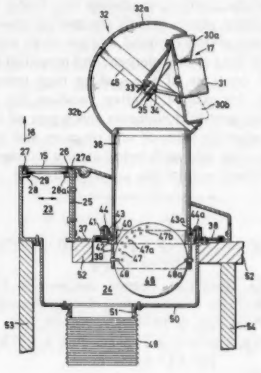
1. A method of manufacturing bags of a labelled fabric, comprising the steps of producing wide-mesh fabric having two opposite surfaces; positioning at least two wide-mesh fabrics in simultaneous advanced movement parallel to each other; guiding at least two first webs between said two wide-mesh fabrics, each first web being guided against one surface of the corresponding wide-mesh fabric; guiding at least two second webs provided with labelling indicia, each parallel to and against said other surface of the respective wide-mesh fabric; bonding each one of said two first and second webs to each other through the interstices of said wide-mesh fabrics so as to form two parallel labelled fabrics; connecting said two parallel labelled fabrics to each other in one continuous two-sides labelled material; cross-seaming said two-sided labelled material to subdivide said material into segments; and dividing said material into a plurality of separate bags having two labelled sides.

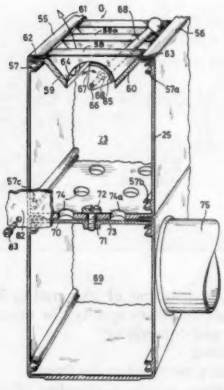
4,253,384

VENTILATING AND AIR CONDITIONING ARRANGEMENT

Friedrich H. Schmidt, Cologne; Fritz Reuter, Meckenheim-Altendorf, and Wolfgang Radtke, Steinenbrück, all of Fed. Rep. of Germany, assignors to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Apr. 12, 1978, Ser. No. 895,656
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2716993
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—40 R **31 Claims**





1. In an air conditioning system of a room used by persons occupying one or more zones, such as work stations or the like, in which a volume of fresh air fed into the room is divided into two air streams, one of which is fed with a low speed into the room to establish in the latter an overall climate and another of which is fed with a speed differing from said low speed to at least one of said zones to provide a person occupying said one zone with a climate differing from said overall climate in said room, a combination comprising first air outlet means for the low speed air stream; second air outlet means for said other air

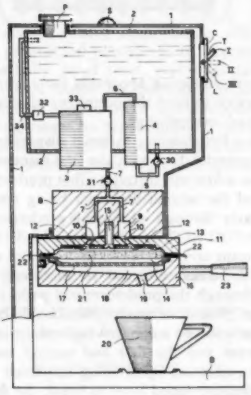
stream; means cooperating with said second air outlet means for regulating the speed of the air stream passing therethrough and for deflecting this air stream to a variable degree; and means connecting said first and second outlet means with said means cooperating therewith to a unit, one of said air oulet means comprising an elongated channel means communicating with said air channel means and having an upper open side, and including grate means extending across said upper open side and air flow changing means comprising elongated slide means located below said grate means and movable in a plane parallel to the latter said connecting means comprise air channel means interconnecting said first and said second air outlet means, and including a common air supply conduit communicating with said channel means.

4,253,385

COFFEE MACHINE

Ernesto Illy, 8, via V. Locchi, Trieste, Italy

Filed Apr. 27, 1979, Ser. No. 33,815
Claims priority, application Italy, May 3, 1978, 21703/78[U]
Int. Cl.³ A47J *31/14, 31/36*
U.S. Cl. 99—281 **9 Claims**



1. A hot-beverage machine, particularly a coffee maker, comprising

a housing having a reservoir for water;

means on said housing forming a brewing chamber having an inlet and an outlet and including a removable cover for the chamber;

filter means in said chamber intermediate said inlet and outlet thereof;

means for removably holding in said chamber, intermediate and spaced from both said inlet and said filter, a water-permeable cartridge containing a beverage-making substance;

a distributor member removably mounted on said housing and to which said chamber-forming means are connected, said distributor member having one surface provided with an annular recess forming an annular distributing chamber of a first cross-section, and an annulus of distributing passages of second cross-section smaller than said first cross-section and each communicating with said intake and with said annular recess, respectively;

electrically energized means for heating water from said reservoir; and

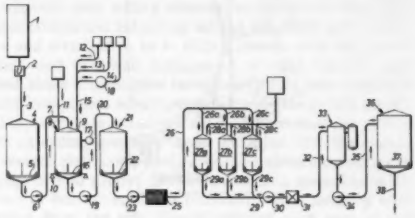
means for forcing the heated water under pressure through said intake, said inlet and said cartridge into said chamber, so as to brew a beverage which leaves said chamber through said outlet.

4,253,386

PROCEDURE FOR MANUFACTURE OF WHEY PRODUCTS IN CONTINUOUS PRODUCTION LINE

Eric R. Egnell, Tyresö, Sweden, assignor to Nedre Norrlands Producentforening ek, Ostersund, Sweden

Filed Oct. 20, 1978, Ser. No. 952,934
Claims priority, application Sweden, Oct. 28, 1977, 7712167
Int. Cl.³ A23C *3/02*
U.S. Cl. 99—453 **5 Claims**



1. Apparatus for the production of ready-to-eat whey products such as whey butter, whey cheese and the like, comprising a sequential processing line having, in combination,

an evaporator for receiving raw whey obtained from cow milk, goat milk or the like and for concentrating said whey to total solids of 40–80% by weight,

first storage means for receiving the concentrate from said evaporator,

means communicating with said first storage means for supplying non-heat-sensitive additives to said concentrate, and for adjusting the pH thereof,

heat exchanger means connected to the outlet of said first storage means for heating said concentrate at a temperature between 90° and 100° C. for a time sufficient to precipitate the whey proteins,

second storage means for receiving the concentrate from said heat exchanger,

means communicating with said second storage means for adding heat-sensitive additives thereto,

homogenizer means connected to the outlet of said second storage means for homogenizing said concentrate,

cooling means connected to the outlet of said homogenizer for reducing said concentrate to a temperature below 30° C. and

third storage means for holding said cooled concentrate until a desired consistency is obtained.

4,253,387

TWINE ACTUATED CUTTER IN A ROTARY CROP BALER

Raymond F. Schmitt, Hesston; Melvin V. Gaeddert, Newton, and Bobby D. McWhirt, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Jul. 3, 1979, Ser. No. 54,459
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **14 Claims**

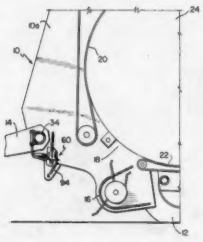
1. In combination with a rotary baler having a member that is operable to dispense a wrapping element to a spinning bale in the baler, said member shifting back and forth during said operation thereof between a standby position at one extreme and a remote position at the opposite extreme and dispensing the element to the bale during said shifting so as to wrap said element around and along the bale, a cutter for severing said element from a source of supply thereof upon return of said member to said standby position, said cutter comprising:

a knife having a cutting edge transverse to the element when the latter is in the cutter and moving toward the bale,

said knife being mounted for engagement and swinging thereof by the member from a cutting position to a posi-

tion permitting movement of the member therepast as the member approaches said standby position; and

a transverse guide adapted to receive said element across the same when the member is in said standby position before severance of the element so as to present a stretch of the element spanning the distance between said guide and the member,



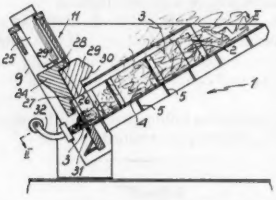
said knife being movable relative to said guide during said swinging of the knife by the member and being disposed for actuation in a returning movement to said cutting position by engagement of the cutting edge with the moving stretch of the element upon release of the knife by the member, said moving stretch thereby causing said knife to depress the stretch and sever the element as the stretch becomes increasingly taut against said cutting edge.

4,253,388

METHOD AND MACHINE FOR COMPRESSING AND CUTTING RANDOM LOADED SCRAP METAL

Luciano Vezzani, Ovada, Italy, assignor to Officine Vezzani S.p.A., Milan, Italy

Filed Apr. 9, 1979, Ser. No. 28,153
Claims priority, application Italy, Apr. 12, 1978, 22234 A/78
Int. Cl.[3] B30B *9/32*
U.S. Cl. 100—39 **1 Claim**



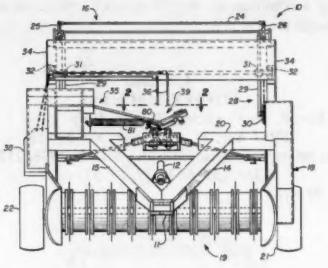
1. A method for continously compressing and cutting random scrap metal, comprising the steps of feeding random scrap metal continously by gravity to a guillotine cutting station in which the scrap metal is cut in a direction substantially perpendicular to the feeding direction of the srap metal, applying a first compression to the scrap metal in a region upstream of, and near to, said guillotine cutting station in a direction substantially transverse to the feeding direction of the scrap metal and substantially perpendicular to the cutting direction, applying a second compression to the scrap metal in a direction substantially perpendicular to the direction of said first compression and substantially parallel to said cutting direction upstream of, and near to, said guillotine cutting station and simultaneously cutting a portion of scrap metal previously compressed in said first and second compression step and advanced beyond said guillotine cutting station, wherein concurrently with said first compression step the scrap metal is gradually compressed upstream of said region of said first compression in the direction of said first compression such as to gradually gather the scrap metal toward said region, and wherein said first and second compression steps are carried out according to concurrent directions.

4,253,389

BREAKAWAY RESET MECHANISM

Willis R. Campbell, Ephrata; Randy Greaser, New Holland, and James T. Clevenger, Jr., Lancaster, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 5, 1980, Ser. No. 118,832
Int. Cl.[3] B65B *13/18*
U.S. Cl. 100—5 **25 Claims**



1. In a twine wrapping apparatus for a crop roll forming machine effective to bind the periphery of a crop roll with a binding material, comprising:

(a) at least a first binding material dispenser and a second binding material dispenser, the first dispenser being rotatable about a first axis through a first predetermined path of travel and the second dispenser being rotatable about a second axis through a second predetermined path of travel;

(b) drive means connectable to the first and second binding material dispensers effective to selectively drive the dispensers through the predetermined paths of travel;

(c) overload protective means positionable between a driving connection and a non-driving connection between the drive means and the first and second binding material dispensers effective upon being subjected to loading beyond a predetermined level to break the driving connection; and

(d) alignment means cooperable with the drive means and the overload protective means to retain the drive means such that the drive means is held in a fixed position while the overload protective means is moved from the non-driving connection to the driving connection to permit the binding material dispensers to be driven through the predetermined paths of travel.

4,253,390

SYSTEM FOR EXTRACTING LIQUIDS FROM FRUIT AND THE LIKE

Arthur J. Hunt, and Arthur J. Hunt, Jr., both of 332 N. Halifax Dr., Ormond Beach, Fla. 32704

Filed Oct. 22, 1979, Ser. No. 86,639
Int. Cl.[3] B30B *9/12, 9/18*
U.S. Cl. 100—45 **24 Claims**

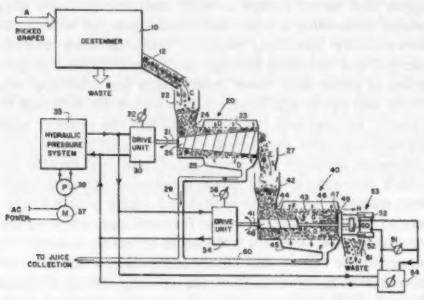
1. A system for extracting juice from grapes and the like comprising:

a destemmer having an input and an output, said input for receiving picked grapes, said destemmer for removing the stems and the leaves from said grapes, said destemmer partially crushing said grapes thereby producing must containing free run juice at said destemmer output;

a predrainer press adapted to receive said free run juice containing must from said destemmer output, said predrainer press adapted to subject said must to a gentle pressing action thereby extracting free run juice and resid-

ual juice from said must, said predrainer press having a predrainer output for the partially dried must, first filtering means for separating said extracted juices from said must, and first collection means associated with said filtering means for collecting said separated juices; and

at least one final press adapted to receive said partially dried must from said predrainer output and to subject said partially dried must to heavy compression action thereby extracting a preselected percentage of the residual juice from said partially dried must, said final press having adjustable control means for providing preselection of said percentage by adjustment of said compression action, second filtering means for separating said extracted residual juice from said partially dried must, and second collection means for collecting said separated residual juice.



4,253,391

RESILIENT SLIDE SURFACE SEAL FOR DOUBLE BELT PRESSES

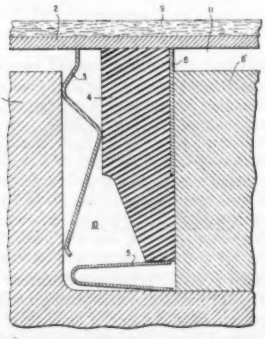
Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,357

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907086

Int. Cl.³ B30B *5/06*

U.S. Cl. 100—154 **5 Claims**



1. In a device forming a pressure cushion in a double belt press operating according to the pressure cushion principle, the press being composed of two support structures fixed relative to one another and two steel belts each supported by, and advancing around, a respective support structure and arranged parallel to one another to define a material compression region, and the device including a pressure plate mounted in one support structure, to be coextensive with the compression region and located adjacent the side of the associated belt facing away from the compression region, the pressure plate being provided with a groove in the surface thereof facing the associated belt and extending in a closed path coextensive with at least part of the compression region and having portions extending generally in the direction of belt advance in the compression region, and a sealing member seated in the groove to bear against the associated steel belt such that the sealing member, the steel belt and the surface of the plate surrounded by the groove together delimit a chamber arranged to contain a pressure medium to form the pressure cushion, the improvement wherein: said sealing member comprises an elastically yieldable component extending around the entire path of said groove and arranged to be in sliding contact with the associated belt, and two wall components of rigid material each disposed along a respective lateral surface of said elastically yieldable component which extends transverse to said surface of said support plate and each located along at least one groove portion extending generally in the direction of belt advance; said pressure plate comprises supporting elements defining at least part of said groove portions extending generally in the direction of belt advance and provided with a series of teeth projecting from the side thereof defining such part of said groove portions and spaced apart along said groove portions; and said sealing member is formed to have a toothed configuration located along the sides thereof facing said supporting elements and formed to mesh with said teeth of said supporting elements for transmitting friction forces imposed on said sealing member by the associated belt to said pressure plate; whereby said elastically yieldable component acts to minimize leakage of pressure medium from said chamber and said wall components serve to define a gap of minimum size between said sealing member and the associated belt.

4,253,392

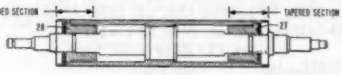
HOLLOW FUSER ROLL WITH VARIABLE TAPER

Fred Y. Brandon, Lexington, Ky.; Jack P. Chang, Boulder, Colo.; William D. Clark, Longmont, Colo., and Eugene G. Stahlberg, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 9, 1979, Ser. No. 27,951

Int. Cl.³ B30B *3/00*; B02C *11/08*; B60B *9/00*; B21B *7/02*

U.S. Cl. 100—155 R **3 Claims**



1. A roll fuser for an electrophotographic copier machine for bonding a developed image to copy-receiving material comprising:

a tapered first roll with end portions radially expanded relative to roll center, said first roll mounted on a shaft for rotation and comprised of a hollow thin outer shell centrally supported on said shaft but not supported at the radially expanded end portions;

a second roll mounted for a mating relationship with said first roll; and

means for pressing together said first and second rolls such that said radially expanded end portions may be flattened when said rolls are pressed together.

4,253,393

METHOD OF MARKING HOT MATERIAL AND APPARATUS THEREFOR

Akimone Sato, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 14, 1978, Ser. No. 924,691

Claims priority, application Japan, Mar. 13, 1978, 53/29097

Int. Cl.³ B41M *1/12*; B41F *17/00*

U.S. Cl. 101—35 **8 Claims**

1. An apparatus for marking hot materials such as slabs and

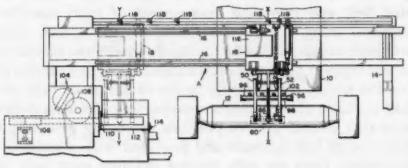
blooms which are moving on a conveying course, wherein said apparatus comprises:

a stencil supply device having means for producing and supplying stencils spaced apart from said conveying course of said hot materials;

a truck movable in a direction perpendicular to said conveying course between said conveying course and said stencil supply device;

a pair of elongated swivel arms rotatably supported by the truck;

a nozzle movable integrally with said swivel arms for spraying a coating composition from behind the stencil;



holders provided at forward portions of said arms respectively, for holding substantially opposite end portions of the stencil; and

driving means provided on said truck for rotating said arms from a first position wherein said forward portions of said arms are above a horizontal plane as said truck approaches said stencil supply device to a second position wherein said arms are in a substantially horizontal position when said truck is at said stencil supply device where said holders receive the stencil from said stencil supply device and to a third position wherein said arms are in a vertical position when said truck is at said conveying course and where the stencil held is caused to approach an end face of the hot material onto which the marking is carried out.

4,253,394

PRINTING APPARATUS

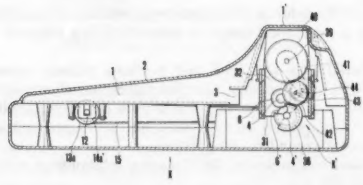
Eiji Tada, Tokyo, Japan, assignor to Kabushiki Kaisha Tada Seisakusho, Japan

Filed Apr. 30, 1979, Ser. No. 35,202

Claims priority, application Japan, Jun. 13, 1978, 53-71341; Oct. 13, 1978, 53-125754; Oct. 18, 1978, 53-143134; Oct. 19, 1978, 53-143844; Dec. 23, 1978, 53-178241

Int. Cl.[3] B41F *3/02, 3/68*

U.S. Cl. 101—250 **7 Claims**



1. A printing apparatus for obtaining an outline design for child's painting and other simple printed materials, comprising; a main body including a main mechanical unit equipped with upper and lower rollers disposed in parallel, spaced from each other and adapted to be rotated by rotary driving means; a printing frame which is adapted to receive thereon an embossed pattern plate, carbon paper and a sheet of paper in this order and allowed to pass between the said parallel-rollers; said main body comprising a housing forming in its upper surface a lowered portion having a flat bottom surface, opening upwardly and frontwardly of the housing; with a width approximately equivalent to that of said printing frame; a through-pass for said printing frame extending longitudinally of the housing from the front wall to the rear end of the rear portion of the housing at substantially the same level and width as the level and width of the bottom surface of said lowered portion, the upper and lower rollers being disposed within the rear portion of the housing horizontally over the substantially entire width of the housing in such a manner that the upper and lower rollers are positioned respectively above and below said through-pass at a space substantially equal to the thickness of said printing frame; support means to rotatably receive said upper and lower rollers at both ends thereof; said support means comprising a plate-like frame equipped with a pair of downwardly extending support walls at both extremities thereof, and including through said support walls two pairs of holes in upper and lower relationship for receiving respectively said upper and lower rollers which are disposed transversely, parallel and rotatably between the support walls; a transmission gear connected to one of said rollers; a clutch connected between said drive means and said parallel rollers which, when the driving means is operated in a positive direction, transmits its positively directed rotary power to the rollers to feed the printing frame forward and, when in the reverse direction, does not transmit its reversely directed rotary power to the rollers; said clutch comprising a sun gear fixedly mounted to a drive shaft of the driving means; a planetary pinion which is in engagement with the sun gear; a freely inserted central axle of the planetary pinion disposed for movement in a guide slot formed in the support wall so as to bring the planetary pinion into engagement with said transmission gear when the central axle of the planetary pinion has approached the inner extremity of the slot and to release said engagement when the central axle has moved to the outer extremity of the guide slot whereby rotary motion in the positive direction will cause said planetary pinion to move to the inner extremity of said slot and thereby transmit rotary motion to said rollers via said transmission gear.

4,253,395

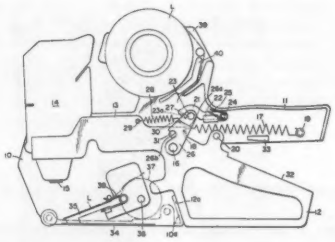
CONSTANT PRESSURE PRINTING MECHANISM FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,768

Int. Cl.[3] B65C *11/02*

U.S. Cl. 101—292 **9 Claims**



1. A constant pressure printing mechanism for use with a hand labeler, said hand labeler comprising a frame; a grip lever forming a portion of said frame; a hand lever hinged to said frame and adapted to be manually squeezed toward said grip lever, a printing head carried on said hand lever, spaced from the hinged connection between said hand lever and said frame and formed with a type bearing surface; said hand lever supporting said printing head such that said printing head moves rigidly with said hand lever; a printing platen mounted to said labeler frame and positioned to face said type bearing surface of said printing head, whereby when said hand lever is squeezed toward said grip lever, said printing head is brought into abutment contact with a label which is on said printing

platen so that the label may be imprinted with the indicia of said type bearing surface;

said constant pressure printing mechanism comprises: a retaining member hinged at a first pivot to said labeler frame; an actuating member hinged at a second pivot to pivot with respect to said hand lever; first bias means for biasing said retaining member into engagement with said actuating member; said retaining member being shaped to prevent said actuating member from moving under bias; second bias means for biasing said actuating member to move out of engagement with said retaining member; and a release member mounted on said hand lever and movable therewith for releasing said retaining member from engagement with said actuating member when said hand lever is squeezed toward said grip lever, whereby the printing operation is effected under a constant pressure caused by said release of said actuating member and the bias of said second bias means irrespective of the intensity of the squeezing force applied to said hand lever.

4,253,396

SHEET GRIPPER

Erich G. Wieland, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

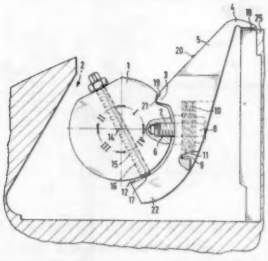
Filed Apr. 26, 1979, Ser. No. 33,646

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822043

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.³ B41F *21/04*

U.S. Cl. 101—409 **5 Claims**



1. A sheet gripper for the impression cylinder of a web-fed rotary printing machine, the impression cylinder carrying an oscillating gripper shaft and an abutment surface at a peripheral portion of the cylinder, said sheet gripper comprising:

a gripper finger having a gripper tip at a first end and a gripper base at a second end of said gripper finger;

means for directly securing said gripper finger to the oscillating gripper shaft, said securing means including a securing screw passing through said gripper finger between said gripper base and said gripper tip and adapted to be directly received in a threaded hole in the gripper shaft, and a spring means retained between a head portion of said securing screw and said gripper finger to spring bias said gripper finger toward the gripper shaft;

a hinge joint between said gripper finger and the gripper shaft for allowing relative pivotal movement between said gripper finger and the gripper shaft during operation of the printing machine, said hinge joint being formed by a portion of said gripper finger having a first shape and a corresponding portion of the gripper shaft having a corresponding second shape, said shaped portion of the gripper shaft extending along the length of the gripper shaft and parallel to the axis of the gripper shaft;

an adjusting screw for adjusting the spacing between said gripper tip and the abutment surface, said adjusting screw passing through the gripper shaft and contacting said gripper base whereby oscillation of the gripper shaft causes said gripper tip to contact the abutment surface and to pivot about said hinge joint upon contact between said tip and abutment surface; and

said gripper finger extending around only a portion of the periphery of the gripper shaft so that said gripper finger is removable from the gripper shaft by unsecuring said securing screw from the gripper shaft, said gripper finger being removable while leaving the gripper shaft in the printing machine.

4,253,397

METHOD OF PRINTING WITH LITHOGRAPHIC INK OF REDUCED VOLATILE SOLVENT CONTENT FOR REDUCING ATMOSPHERIC POLLUTION

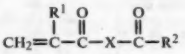
William D. Emmons, Huntingdon Valley; Peter R. Sperry, Doylestown, and Fred A. Kaplan, North Wales, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 14,676, Feb. 23, 1979. This application Oct. 24, 1979, Ser. No. 87,840

Int. Cl.³ C8D *11/06*; B41M *1/00*; C08K *5/11*

U.S. Cl. 101—450.1 **13 Claims**

1. The method of printing by lithography comprising the steps of applying a printing ink containing a colorant a binder resin and a reactive diluent to a lithographic printing plate, transferring the ink to the substrate being printed, and curing the transferred ink, the improvement in which the diluent comprises an oxidatively curable compound of the formula



wherein

$-R^1$ is $-H$ or $-CH_3$

R^2 is an aliphatic radical having 11–23 carbon atoms and containing at least one olefinic double bond, or mixtures thereof, R^2 being free of terminal double bonds, and

$-X-$ is either $-OR^3O-$ in which R^3 is an aliphatic or cycloaliphatic hydrocarbon residue containing from 2 to 10 carbon atoms, or $-O(CH_2CHR^4O)_n-$ where R^4 is $-H$ or $-CH_3$ and n is an integer of from 2–10, or mixtures therof.

4,253,398

MOBILE APPARATUS FOR THE CONTINUOUS REPLACEMENT OF TIES

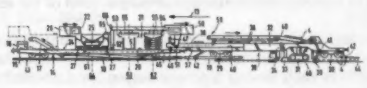
Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Aug. 27, 1979, Ser. No. 70,315

Claims priority, application Austria, Sep. 14, 1978, 6666/78

Int. Cl.³ E01B *29/05, 27/11*

U.S. Cl. 104—2 **8 Claims**



1. A mobile apparatus for the continuous replacement of ties of an old track section resting on a ballast bed by ties of a new track section, which comprises a train of a plurality of track-bound freight cars including a last freight car movable in a working direction over the old track section, old and new ties being stored on selected ones of the freight cars, a traveling gantry crane including means for gripping the ties, the gantry crane being movable on the train to and from respective ones of the freight cars, a work car having a front frame end, a pivot

supporting the front frame end of the work car for pivoting about a vertical axis on the last freight car, devices mounted on the work car for removing the ties of the old track section and for laying the ties of the new track section, elongated conveyor means mounted on the work car for conveying the ties of the old track section from the tie removing device and the ties of the new track section to the tie laying device, and a tie transfer vehicle having front and rear gantry undercarriages, the undercarriages defining an axle distance therebetween, the front gantry undercarriage of the tie transfer vehicle being movable only on the last freight car and the rear gantry undercarriage of the tie transfer vehicle being movable only on the work car, the tie transfer vehicle including two tie gripping devices arranged successively in the working direction for simultaneously receiving the ties of the old track section and delivering the ties of the new track section while the ties are positioned transversely to the old track section.

4,253,399

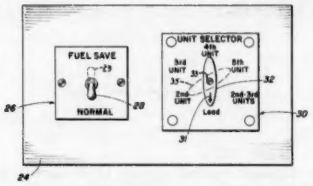
RAILWAY LOCOMOTIVE FUEL SAVING ARRANGEMENT

Rudolph D. Spigarelli, Shreveport, La., assignor to Kansas City Southern Railway Company, Kansas City, Mo.

Continuation of Ser. No. 797,502, May 16, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 102,271

Int. Cl.[3] **B61C** *3/00, 5/00, 17/12*

U.S. Cl. 105—62 R **9 Claims**



1. In a locomotive system including a plurality of locomotive units each having a power output level normally controlled by throttle control circuitry which is common to all of the locomotive units, a fuel saver arrangement for the locomotive system comprising: a plurality of override circuits corresponding to the respective locomotive units, each override circuit being normally open and being operable when completed to override said throttle control circuitry in a manner to reduce the power output level of the corresponding locomotive unit independently of the throttle control circuitry and the power output level of the remaining units; and selector means associated with the override circuits for selectively completing the override circuit corresponding to at least one selected locomotive unit which is to have its power output level reduced, said selector means having a normal setting wherein each override circuit is in its normally open condition to permit the throttle control circuitry to control the power output level of all of the locomotive units, and a fuel saver setting wherein the override circuit corresponding to said selected locomotive unit is completed to thereby reduce the power output level of the selected unit.

5. A fuel saver arrangement for a multiple unit locomotive system including a plurality of electrically interconnected locomotives each having a power output level normally controlled by throttle control circuitry which is common to all of the locomotives and which normally maintains each locomotive at the same power output level, said fuel saver arrangement comprising: an override circuit for each locomotive adapted for connection to the throttle control circuitry, each override circuit having a normally open condition wherein the throttle control circuitry is unaffected and each override circuit having a completed condition wherein the override circuit overrides the throttle control circuit in a manner to reduce the power output level of the corresponding locomotive irrespective of the condition of the throttle control circuitry; a normally open fuel saver switch disposed in a circuit which is common to override circuit to thereby maintain each override circuit in its normally open condition when the fuel saver switch is in its normally open condition; and a selector switch having a plurality of settings corresponding to the respective override circuits, said selector switch completing the override circuit corresponding to the setting of the selector switch when the fuel saver switch is closed, whereby the power output level of at least one selected locomotive can be reduced by closing the fuel saver switch and positioning said selector switch in the setting corresponding to the override circuit of said selected locomotive.

8. A method of reducing the power output of a multiple unit locomotive system which includes a plurality of locomotives each having a power output normally controlled by throttle control circuitry common to all of the locomotives, said method comprising the steps of:

selecting at least one of the locomotives which is to have its power output reduced; and

overriding the throttle control circuitry in a manner to reduce the power output of said one locomotive independently of the throttle control circuitry while said throttle control circuitry continues to control the power output of the remaining locomotives.

4,253,400

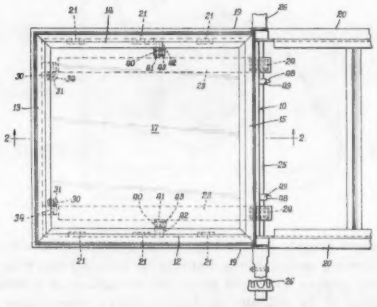
RAILWAY HOPPER CAR SLIDING GATE CLOSING MECHANISM

Robert T. Fischer, Homewood, Ill., and William R. Shaver, Griffith, Ind., assignors to Miner Enterprises, Inc., Geneva, Ill.

Filed Jun. 14, 1979, Ser. No. 48,370

Int. Cl.[3] **B61D** *7/20, 7/22, 7/26*

U.S. Cl. 105—282 P **3 Claims**



1. A gate lifting apparatus for use with a hopper car wherein there is a frame having a part defining a discharge opening, a slide gate for opening and closing said opening, said frame having means associated with the gate and shifting the gate for movement along a generally horizontal path between a first position generally outboard of one side of said frame and away from said opening and a second position at which said gate is below and across said opening, and means interconnecting the frame and gate for moving said gate between said positions, said gate lifting apparatus comprising means on the underside of said gate and means on frame, below said gate and pivotable about an axis for moving said gate to said second position in a generally vertical direction toward and away from said part and characterized by:

said pivotable means comprising a lever arm having a nose, said lever arm being pivotable between an upright generally vertical position and an inclined position at which the nose projects from said axis upwardly and toward the first position of the gate;

said frame including a stop which engages said lever arm

when the lever is in said inclined position to prevent said lever from moving farther toward a horizontal position;

said means on said gate comprising three abutments one of which faces downwardly, a second of which faces generally toward said one side and the third of which faces generally away from said one side, said three abutments forming a downwardly facing socket, said second abutment being above said nose when said gate is in said path and said lever is in said inclined position, said third abutment extending downwardly to an elevation below the nose when said gate is in said path and said lever is in said inclined position;

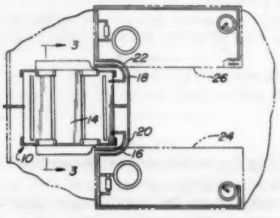
whereby as said gate moves from said first to said second position said socket will first move into registry with said nose and then said third abutment will engage said lever arm to pivot said lever arm to said upright position thereby raising said gate, and as said gate starts to move away from the second position and toward the first position said second abutment engages said lever arm and pivots said lever arm from said upright to said inclined position thereby lowering the gate away from said part and into said generally horizontal path.

4,253,401

SUPPORTING MEANS FOR A WATER TANK FOR A RAILWAY CAR

Kenneth R. Hesser, Philadelphia, Pa., assignor to The Budd Company, Troy, Mich.

Filed Oct. 25, 1978, Ser. No. 954,477
Int. Cl.³ B61D *5/00, 35/00*
U.S. Cl. 105—329 R **9 Claims**



1. A railway car having a plastic water tank mounted therein and support means therefore comprising:

(a) a pair of end brackets secured to the roof of said railway car,

(b) a bottom assembly secured to said end brackets for receiving said water tank thereon, said bottom assembly includes a pair of elongated angular members each having a flat horizontal portion to receive said water tank thereon and a flat vertical portion extending from said horizontal portion to receive said water tank therebetween,

(c) said bottom assembly including means for restraining the lateral and longitudinal movements of said water tank, and

(d) flexible means in engagement with said water tank and roof to compensate for changes in positions or dimensional changes of said water tank.

4,253,402

DESK TRAY AND METHOD OF MAKING THE SAME

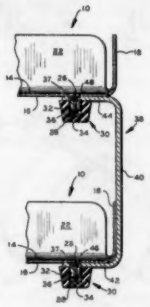
Thomas R. Carrig, and James T. Kraus, both of Wapakoneta, Ohio, assignors to Sheller-Globe Corporation, Toledo, Ohio

Filed Jan. 15, 1979, Ser. No. 3,603
Int. Cl.³ A47B *17/00*
U.S. Cl. 108—27 **14 Claims**

1. A desk tray structure comprising:

a first desk tray including a generally planar base section having an uninterrupted top document supporting surface and a coextensive bottom surface, at least one upwardly extending wall attached to the periphery of the document supporting surface of said base section, and a plurality of downwardly extending studs attached to the bottom surface of said base section in supporting relation therewith, said studs including resilient foot members;

a second desk tray including a generally planar base section having an uninterrupted top document supporting surface and a coextensive bottom surface, at least one upwardly extending wall attached to the periphery of the document supporting surface of said base section, and a plurality of downwardly extending studs attached to the bottom surface of said base section; and



a plurality of spacer brackets for supporting said second desk tray above said first desk tray, said spacer brackets each including a generally vertical main body portion, a lower arm connected to the main body portion for engagement with one of said studs of said first desk tray, and an upper arm connected to the main body portion for engagement with one of said studs of said second desk tray whereby said second desk tray is positioned in supported relation above said first desk tray.

4,253,403

AIR FLOW REGULATOR

Joel Vatsky, 15 Edgewood Ter., Millburn, N.J. 07041

Division of Ser. No. 920,295, Jun. 29, 1978, Pat. No. 4,206,712.
This application Oct. 2, 1979, Ser. No. 81,183
Int. Cl.³ F23K *3/02;* **F23C** *5/08*
U.S. Cl. 110—104 B **2 Claims**

1. A flow control means for use with a burner to provide a flow of substantially turbulence-free combustion supporting fluid to the burner, comprising:

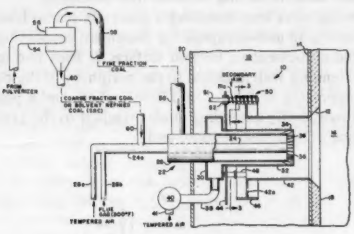
a conduit adapted to be disposed about the outlet of the burner;

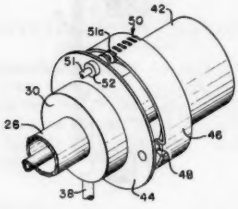
a pair of substantially-parallel, spaced members operatively connected to said conduit, said spaced members defining therebetween a flow passage;

a tubular sleeve slidably disposed on said spaced members and movable to vary the size of the flow passage;

a plurality of spaced perforations disposed on said tubular sleeve in a row parallel to the longitudinal axis of said tubular sleeve; and

screw means rotatably disposed in operative engagement with said perforations,





whereby rotation of said screw means causes movement of said tubular sleeve axially relative to the longitudinal axis for said sleeve.

4,253,404

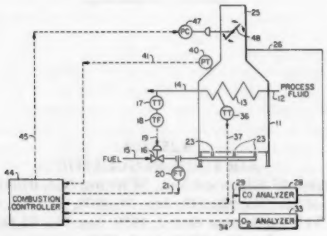
NATURAL DRAFT COMBUSTION ZONE OPTIMIZING METHOD AND APPARATUS

Donald J. Leonard, Lagunitas, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 972,110, Dec. 21, 1978. This application Mar. 3, 1980, Ser. No. 126,258

Int. Cl.[3] F23N *5/18*

U.S. Cl. 110—188 **4 Claims**



1. Method for optimizing the operation of a multiple burner natural draft combustion zone having a fuel supply, a combustion air supply and through which a conduit containing a process fluid to be heated passes, which comprises:

(a) increasing the flow rate of said combustion air as necessary to maintain the CO concentration in the flue gas below a predetermined maximum, as necessary to maintain the O_2 concentration in the flue gas above a predetermined minimum, as necessary to maintain the draft in the combustion zone above a predetermined minimum, as necessary to maintain the temperature of the outer surface of said conduit below a predetermined maximum and whenever the rate of increase in the rate at which fuel is supplied to the combustion zone exceeds a predetermined maximum;

(b) decreasing the flow rate of said combustion air whenever an increase in said combustion air flow rate is not necessary to accomplish step (a); and

(c) signaling an alarm whenever the CO concentration is above its predetermined maximum and the O_2 concentration is above a predetermined maximum.

4,253,405

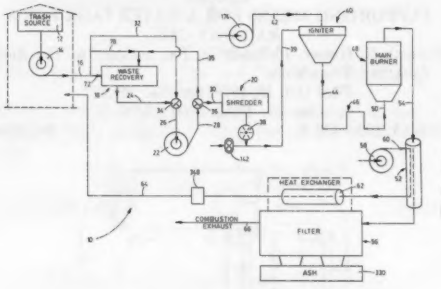
METHOD AND A SYSTEM FOR INCINERATING COMBUSTIBLE WASTES

Henry L. Cottrell, Selma, and Wesley A. Faith, Fresno, both of Calif., assignors to VFE Corp., Fowler, Calif.

Division of Ser. No. 809,094, Jun. 23, 1977, Pat. No. 4,169,418. This application Feb. 26, 1979, Ser. No. 14,947

Int. Cl.[3] F23G *5/02*

U.S. Cl. 110—222 **12 Claims**



1. In a system for incinerating combustible solid waste, the improvement comprising:

A. first conduit means for establishing within said system a flowing stream of atmospheric air;

B. means connected to said first conduit means for mixing particles of solid waste in said flowing stream of atmospheric air including a shredder for particlizing combustible solid waste fed thereto to form combustible particles substantially of uniform size;

C. means for igniting said particles including an ignition chamber having defined therein an ignition surface, said ignition surface being of an annular, cross-sectional configuration, and delivery means for directing said particles mixed with said stream of air into impinging engagement with said surface including means defining in the surface an orifice communicating with said first conduit means and with said chamber having an axis extended in parallelism with a tangent to the surface, and a stream discharge orifice;

D. second conduit means for conducting said stream of air away from said chamber characterized by an angulated duct connected in communicating relation with the discharge orifice of said ignition chamber defining a turbulent path for the stream of air as it is conducted away from said chamber including an entrance orifice for said stream and an exit orifice for the stream, and a particle trap including a combustion chamber connected in communication with said exit orifice for capturing ignited unconsumed particles of waste and confining the particles until they are substantially consumed, and a discharge throat for discharging by-products of combustion including heated gasses and ash.

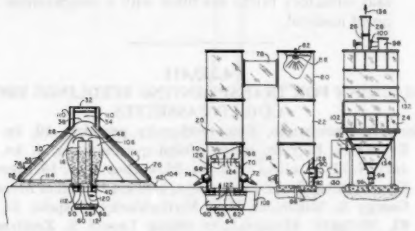
4,253,406
FLUELESS COMBUSTION CHAMBER

Albert W. Spitz, Glenside, and Milton I. Schwab, Philadelphia, both of Pa., assignors to Milpat Corporation, Glenside, Pa.

Division of Ser. No. 806,831, Jun. 15, 1977, Pat. No. 4,162,654. This application Jan. 17, 1979, Ser. No. 4,078

Int. Cl.³ F23G *9/00*

U.S. Cl. 110—241 **3 Claims**



1. In a portable combustion chamber

a continuous sidewall comprising a peripheral shell having an open base and a closed top,

the sidewall defining an interior space adapted to confine products of combustion therewithin,

the shell having no flue opening therethrough of the type adapted to permit passage of products of combustion;

a structural frame affixed exteriorly to the shell,

the said frame being adapted to support and carry the weight of the shell; and

a standpipe defining a products of combustion exhaust tube positioned within the interior space, the standpipe being adapted to convey products of combustion exteriorly of the shell;

whereby the shell may be lifted and transported to the combustion location by lifting and transporting the frame.

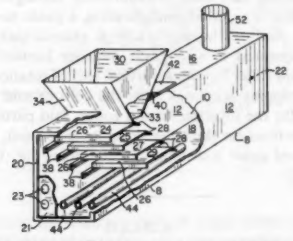
4,253,407
BURNER FOR COMBUSTING PARTICULATE FUELS

Arnold Larson, P.O. Box 595, Pagosa Springs, Colo. 81147

Filed Mar. 14, 1979, Ser. No. 20,613

Int. Cl.³ F23B *1/20;* **F23H** *1/02, 17/08;* **F23K** *3/00*

U.S. Cl. 110—267 **28 Claims**



1. In a burner for combusting particulate fuels comprising a combustion chamber having a plurality of grates positioned therein in stairstep fashion over which the fuel flows, the improvement comprising said grates having supports which extend beyond the fuel bed and define air passages such that combustion air can bypass the fuel on the grates by flowing through said passages.

5. A burner for combusting particulate fuels comprising:

A. a combustion chamber

B. a plurality of grates positioned within the combustion chamber in stairstep fashion, each having a downwardly sloping surface,

C. a plurality of bypass channels within the combustion chamber which support the grates and extend beyond the fuel bed,

D. a baffle plate for directing the deposition of a fuel bed across the downwardly sloping portion of the grates, which baffle plate is positioned above the uppermost grate and is shaped so that the fuel is distributed more in line with the bypass channels than between them, and

E. an exhaust means communicating with the interior of the combustion chamber.

4,253,408
METHOD OF PROTECTING INCINERATOR SURFACES

Irvin R. Kramer, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,194

Int. Cl.³ F23J *1/00*

U.S. Cl. 110—346 **4 Claims**

1. A method of increasing the fusion temperatures of combustion products formed during the incineration of sewage comprising the steps of:

mixing one or more additive materials selected from the group SiO_2, CaO, Al_2O_3, MgO with sewage consisting essentially of from about 90 to 98 percent water and from about 2 to 10 percent sewage solids, wherein the combined weight of the additives is not greater than 30 percent of the weight of the sewage solids, with the CaO, Al_2O_3 and MgO being selected from within the range of 10 to 30 percent of the weight of the sewage solids and SiO_2 being selected from within the range of 25 to 30 percent of the weight of the sewage solids;

maintaining said additive materials uniformly dispersed within the sewage-additive mixture;

dispersing said sewage-additive mixture into a combustion zone of an incinerator such that the sewage solids and additive particles are maintained in contact;

retaining the additives and sewage solids in contact within a combustion zone of an incinerator for sufficient time for the additives to chemically combine with the waste solids so that the ash product formed by the combustion of the waste solids and additives has an increased range of fusion temperatures above the operating temperatures of the incinerator walls.

4,253,409
COAL BURNING ARRANGEMENT

Alex F. Wormser, Marblehead, Mass., assignor to Wormser Engineering, Inc., Marblehead, Mass.

Continuation of Ser. No. 932,138, Aug. 8, 1978, abandoned, which is a continuation of Ser. No. 816,329, Jul. 18, 1977, abandoned, which is a continuation of Ser. No. 604,923, Aug. 15, 1975, Pat. No. 4,051,791. This application Jun. 6, 1979, Ser. No. 46,029

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **4 Claims**

1. The method of burning coal which comprises the steps of

introducing pulverized coal into a fluidized bed pyrolyzer,

carrying out in said pyrolyzer a reaction to produce char and volatiles,

introducing sorbent at or downstream of said pyrolyzer to react with said volatiles to produce desulfurized volatiles and sulfur-bearing sorbent containing sulfur taken from said volatiles,

separating the char from the volatiles,

separating the sulfur-bearing sorbent from the volatiles,

introducing the char into a fluidized bed burner,

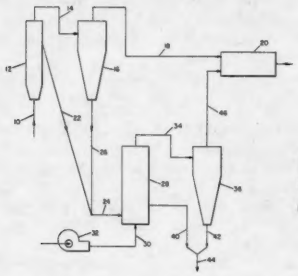
introducing into the burner a stoichiometric excess of air, said excess of air being chosen to produce an ash temperature below the fusion temperature thereof,

burning the char with the stoichiometric excess of air to form thereby dry ash and a mixture of gases,

reacting said mixture of gases in or downstream of said

burner with said sulfur-bearing sorbent or with a second sorbent to produce a desulfurized mixture of gases and a second sulfur-bearing sorbent,

separating the ash from the mixture of gases,



separating said second sulfur-bearing sorbent from the mixture of gases, and

burning said desulfurized volatiles in said desulfurized mixture of gases.

4,253,410

RELIEF BRICKWORK OVER OPENING IN REFRACTORY BRICK WALL

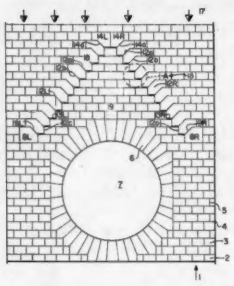
Walter Laux; Martin Zettel, both of Wiesbaden, and Erich Ambrosius, Wiesbaden-Schierstein, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,601

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839610

Int. Cl.[3] **F23M** *5/06;* **C21B** *9/00*

U.S. Cl. 110—331 **20 Claims**



1. In a refractory brickwork wall, particularly of a combustion chamber of a hot blast stove, having therethrough an opening, such as a hot blast exit opening, said wall being formed of refractory bricks joined together at joints and a plurality of relief bricks arranged in said refractory bricks in the configuration of a gable or roof extending above said opening, the improvement wherein:

each said relief brick has an upper inclined surface, a lower inclined surface and a lower, generally horizontal step surface;

said relief bricks are arranged one above the other in an inclined formation, with the said lower inclined surface of the upper said relief brick of each pair of adjacent relief bricks resting on the said upper inclined surface of the lower said relief brick of said pair of adjacent relief bricks, and with said upper relief brick of each said pair of adjacent relief bricks being partially offset in a horizontal direction from said lower relief brick of said pair of adjacent relief bricks;

said horizontal step surface of said upper relief brick of each said adjacent pair of relief bricks extends horizontally at least partially beyond said lower relief brick of said pair of relief bricks and faces a surface of one of said refractory bricks and defines therewith a joint; and

all of said joints between said horizontal step surfaces and said refractory bricks are filled with a compressible fireproof material.

4,253,411

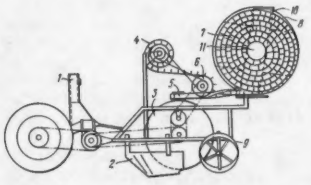
MACHINE FOR TRANSPLANTING SEEDLINGS FROM COILED CASSETTES

Boris A. Shulzhenko, Blagoveschensky pereulok, 10, kv. 33; Evgeny A. Belyaev, ulitsa Molodogvardeiskaya, 6, kv. 10; Jury N. Lipov, ulitsa Vavilova, 56, korpus 2, kv. 167; Igor N. Egorov, ulitsa Preobrazhenskaya, 5/6, kv. 183, all of Moscow; Georgy A. Mikaelian, Novo-Mytischinsky prospekt, 82, kv. 93, Mytischi, Moskovskaya oblast; Leonid S. Zemlyanov, ulitsa Solnechnogorskaya, 10, kv. 15, and Anatoly F. Krutkov, ulitsa S. Kovalevskoi, 2, korpus 4, kv. 40, both of Moscow, all of U.S.S.R.

Filed Dec. 22, 1978, Ser. No. 972,358

Int. Cl.[3] **A01C** *11/02*

U.S. Cl. 111—2 **4 Claims**



1. An apparatus for transplanting seedlings from coiled cassettes, comprising: a movable frame, a platform mounted on said frame, a cassette havng two end portions structured as a band having a plurality of perforations and having a plurality of spaced partitions defining cells for seedlings, said platform mountable vertically on said frame and provided with an inclined groove for retaining said cassette, the edge of said partitions engaging said band intermittently throughout its entire length when in a coiled configuration, a guide member mated with said platform having a helical groove therein, a roller pivotally secured to said guide member located at one end therein, said roller having a vertical axis of rotation, a planting unit for gripping seedlings from the cells of said cassette disposed under the location of said roller, said partitions having two projections on the edge opposite said band, said projections spaced apart a distance greater than the width of said band.

4,253,412

SEED CONFINING ATTACHMENT FOR A WHEAT DRILL

LaVernon S. Hogenson, Box 66, Hingham, Mont. 59528

Filed Jun. 25, 1979, Ser. No. 51,875

Int. Cl.[3] **A01C** *5/00*

U.S. Cl. 111—86 **5 Claims**

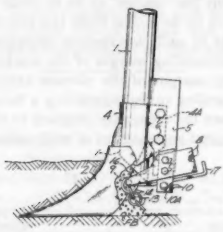
1. An attachment for a tubular seed delivery boot of the type having a shovel with sides and a forward apex and a rearwardly directed bracket at the boot lower end and carried by a shovel drill machine for the continuous planting of seeds, said attachment comprising,

a support structure for attachment to the boot bracket,

side plates carried by the support structure and extending forwardly therefrom and interconnected at their forward

ends by a cross pin located below the open end of the seed delivery boot,

a deflector supported by said cross pin and disposed within the lower end of the boot, said deflector having a forwardly facing inclined surface so as to deflect seeds forwardly in the direction of travel of said boot, and



multiple plates and interconnecting links carried by said cross pin so as to dispose an uppermost plate below the deflector so as to act on gravitating seed to cause same to be forwardly deflected toward the lowermost surface of the furrough bottom substantially intermediate the shovel sides with seed deposit prior to return of displaced soil to the furrough.

4,253,413

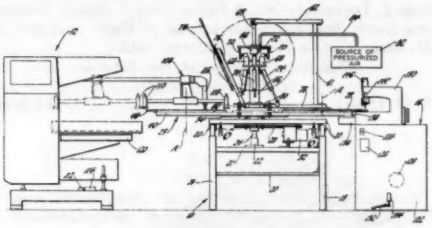
AUTOMATIC SEWING APPARATUS FOR AIR CUSHIONS

Stanley E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 963,432, Nov. 24, 1978. This application Jul. 25, 1979, Ser. No. 60,645

Int. Cl.³ D05B *97/00*

U.S. Cl. 112—262.3 **2 Claims**



1. A method of sewing a pair of equal diameter circular sheets of fabric together to form a restraint cushion for a vehicle, comprising the steps of placing one of said pair of sheets on a rotatable circular table having a diameter less than the diameter of said sheets so that the peripheral portion of said sheets extends uniformly beyond the circumferential edge of said table, placing the other of said pair of sheets onto said one of said sheets in concentric relationship therewith, moving a cover onto said pair of sheets so as to maintain the latter in a fixed position on said table while applying a restraining force to said table to prevent the latter from rotating, positioning the table adjacent a sewing machine and simultaneously releasing said restraining force so as to allow said table to freely rotate as the peripheral portion of said sheets is sewn together by said sewing machine.

4,253,414

METHOD AND APPARATUS FOR CLUTCH CONTROL IN THE OPERATION OF A SHIP'S PROPULSION SYSTEM HAVING A DIESEL MOTOR

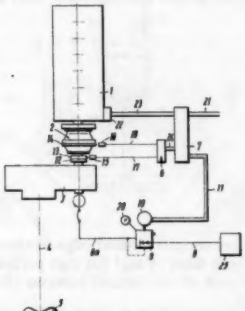
Wilhelm Schäfer, Käthe-Kollwitz-Weg 1, 5810 Witten-Bommern, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,565

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652385

Int. Cl.³ B63H *1/14, 5/06*

U.S. Cl. 440—84 **4 Claims**



1. Method for operating a ship's propulsion installation having a Diesel engine and the ship's drive, means for detecting engine operating conditions, a pressure-medium-activated friction clutch with an adjustable pressure medium feed between the clutch elements connecting the Diesel engine and the ship's drive, and regulating means between the detecting means and the pressure medium feed, said method comprising, controlling the pressure of the pressure-medium in dependency on the operating conditions of the Diesel engine by initially setting the pressure of the pressure-medium at a relatively high holding value when the Diesel engine is idling, and then, upon the occurrence of an increase in torque variation sensed by said detecting means, decreasing the pressure holding value by means of the regulating means to cause a slippage in the friction clutch, thus dampening the torque variation and retaining the lower pressure holding value for as long as the increased torque variation continues.

4,253,415

PORTABLE ILLUMINATED TRAFFIC LIGHT

Alois Ferch, Neuss, Fed. Rep. of Germany, assignor to Ferch & Nabben, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,249

Int. Cl.³ G01F *9/01, 9/04*

U.S. Cl. 116—63 P **13 Claims**

1. A traffic sign for roadways, comprising

(a) a weighted base;

(b) a substantially rectangular, one-piece, flat sign portion comprised of a molded pliable polymer of relative low specific gravity and of relative high strength;

(c) vertical tube means connecting said base to said sign portion;

(d) said vertical tube means including

(1) a cylindrical flexible adapter;

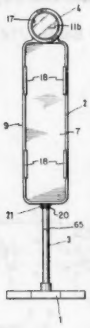
(2) a first vertical tube extending from said weighted base to said adapter;

(3) a second vertical tube extending from said sign portion to said adapter;

(4) spaced coaxial blind bores in said adapter for receiving said first and second vertical tubes;

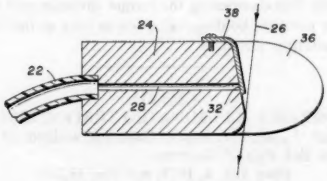
(5) an annular locking clip receiving groove in the outer surface of said adapter adjacent the top thereof;

(e) integral vertical reinforcing rib means extending adjacent to the longitudinal axis of said sign portion;
(f) a pair of spaced transverse integral reinforcing ribs extending laterally from the rear surface of said sign portion;
(g) coaxial bores in said spaced transverse ribs, said coaxial bores in the said longitudinal axis of said sign portion;
(h) said coaxial bores receiving said second vertical tube;



(i) a continuous integral molded edge reinforcement extending from both faces of said flat sign portion;
(j) a bore in each of the vertical portions of said edge reinforcement;
(k) elongated flexible reinforcing means extending in said vertical bores; and
(l) a space in said flat sign portion for containing electrical connection means for said warning light.

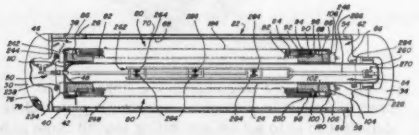
4,253,416
METERED FINISH
Louis B. Williams, Jr., Walnut Hill, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Jul. 2, 1979, Ser. No. 54,385
Int. Cl.[3] B05C *3/00*
U.S. Cl. 118—401 **6 Claims**



1. In a finish applicator wherein finish is metered through a passageway to a yarn, the improvement comprising check valve means at the exit end of said passageway for permitting said finish to exit from said passageway while substantially preventing stray air currents from entering said exit end.

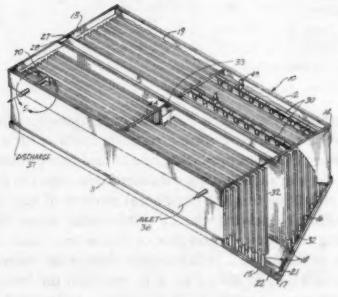
4,253,417
CLOSURE FOR THERMAL REACTOR
Johan A. Valentijn, Orange, Calif., assignor to Thermco Products Corporation, Orange, Calif.
Filed Feb. 21, 1980, Ser. No. 123,243
Int. Cl.[3] C23C *13/08*
U.S. Cl. 118—733 **14 Claims**

1. In an apparatus for thermal treatment of silicon wafers or other workpieces at high temperatures and high pressures in controlled atmospheres, of a type comprising
(a) a reactor, which is made of a refractory material, which is adapted to hold such workpieces, and which has a workpiece portal for insertion and removal of such workpieces,
(b) a pressure vessel, in which the reactor is disposed, and which has an access portal for access to the workpiece portal,
(c) a closure, which is made of the same material, and which is adapted to be attached to the reactor so as to close the workpiece to the reactor so as to close the workpiece portal and to be detached from the reactor for insertion and removal of such workpieces through the workpiece portal, a surrounding margin of the workpiece portal and an adjoining margin of the closure respectively having congruent sealing surfaces enabling a hermetic seal to be effected when the closure is attached to the reactor so as to effect mutual engagement of said surfaces,



(d) means for biasing the closure so as to press said sealing surfaces against each other when the closure is attached to the reactor, and so as to enable excess pressure within the reactor to be relieved through the wafer portal,
(e) a pressure-vessel head, which is adapted to be attached to the pressure vessel so as to close the access portal and to be detached from the pressure vessel for access to the workpiece portal through the access portal, the closure being mounted within the pressure-vessel head so as to enable the closure and the pressure-vessel head to be attached and detached as subassembly, an improvement wherein the apparatus comprises
(f) gimbals mounting the closure within the pressure-vessel head whereby a hermetic seal can be effected by mutual engagement of said sealing surfaces despite misalignments between the reactor and the closure.

4,253,418
ABALONE MARICULTURE
George S. Lockwood, Carmel Valley; Fred T. Shultz, Sonoma, and Gerrit Bevelander, Carmel, all of Calif., assignors to Monterey Abalone Farms, Monterey, Calif.
Filed Aug. 23, 1978, Ser. No. 935,872
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—2 **17 Claims**



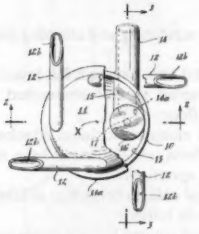
1. Apparatus for culturing motile benthic marine and aquatic organisms comprising:
(a) a tank for retaining a volume of water,
(b) means for circulating water through the tank,

(c) at least one grid structure removably mounted in the tank, the grid structure forming a plurality of open sided compartments, on the surfaces of which the animals can settle, metamorphose and feed,
(d) means for circulating water within the tank to cause it to flow through the compartments, and
(e) at least one light source immersed in the tank adjacent the grid structure to project superambient light through the open sides of the compartments and onto the surfaces thereof to promote photosynthesis and development of micro-biological communities on such surfaces.

4,253,419
MILK CLAW

Denis C. Yang, Irvington, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed May 24, 1979, Ser. No. 42,123
Int. Cl.[3] A01J *7/00*
U.S. Cl. 119—14.54 **5 Claims**



1. A milk claw comprising a hollow body forming a milk collecting chamber having a central vertical axis, said body having upper and lower portions, four inlet nozzles protruding from said hollow body and opening into said chamber at regions spaced around said axis, the nozzles slanting downwardly toward said body at an acute angle to the horizontal while extending tangentially in one and the same direction relative to said axis, said nozzles being positioned to cause milk entering the chamber from the nozzles to spin in said one direction about said axis as the milk descends in a spiral path in the chamber, and a discharge nozzle protruding from the lower portion of said body and opening into said chamber at a region located in the spiral path of the spinning milk, the discharge nozzle extending from said chamber tangentially in said one direction relative to said axis, whereby the discharge nozzle discharges the milk tangentially from said chamber in the direction of said spin.

4,253,420
COLLECTING PIECE

Tilman Hoefelmayr, Niederteufen, Switzerland, assignor to Bio-Melktechnik Swiss Hoefelmayr & Co., Niederteufen, Switzerland

Filed Sep. 4, 1979, Ser. No. 72,710
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1978, 2838705
Int. Cl.[3] A01J *5/00, 5/04*
U.S. Cl. 119—14.55 **14 Claims**

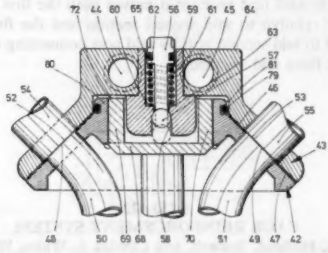
1. A collecting piece for use in the hose line between a milking machine and the individual milking cups to control the supply of a vacuum to said individual milking cups while simultaneously maintaining the milk supplied from each of said milking cups separate from one another, said collecting piece comprising:

a first cup-shaped member having a bottom wall and a first conically enlarging side wall extending away from said bottom wall, the inner surface of said conical wall defining a first sliding surface;

a second cup-shaped member having a bottom wall and a second conically enlarging wall extending away from said bottom wall, the outer surface of said second conical wall defining a second sliding surface parallel to said first sliding surface, said first sliding surface sealingly and slidingly engaging said second sliding surface;

first means supporting said first and second cup-shaped members for relative movement between first and second positions so that said first and second sliding surfaces slidingly engage each other during the entirety of said movement;

plural supply lines connected to and extending through said first cup-shaped member, said plural supply lines each terminating flush with said first sliding surface; and

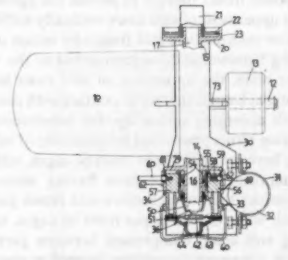


plural discharge lines equal in number to said supply lines connected to and extending through said second cup-shaped member, said plural discharge lines each terminating flush with said second sliding surface and in axial alignment with a respective one of said plural supply lines when said first and second cup-shaped members are in said first position, said supply lines and said discharge lines being out of axial alignment when said first and second cup-shaped members are in said second position to block the vacuum supply to and the milk supply from said individual milking cups.

4,253,421
LIQUID FLOW SENSING DEVICES

Paul Slater, Palmerston North, and Michael J. Scott, Feilding, both of New Zealand, assignors to Delta Plastics Limited, Palmerston North, New Zealand

Filed Jul. 5, 1979, Ser. No. 54,699
Claims priority, application New Zealand, Jul. 5, 1978, 187779
Int. Cl.[3] A01J *7/00*
U.S. Cl. 119—14.08 **12 Claims**



1. A valve unit for the liquid flow sensing device of the type having control means which is movable between first and second positions when the flow rate is respectively low and high but biassed to the said first position, said valve unit comprising: a first valve section movable in response to movement

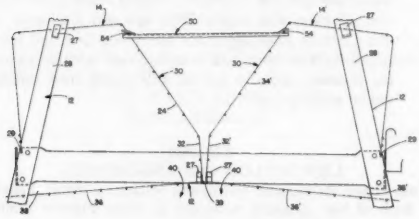
of the control means, a second valve section fixed in relation to said first section, said second valve section having first and second ports therein, a third valve section being movable independently of said first and second valve sections and having means for connecting said first and second ports, said first and second valve sections defining a fluid flow passage therethrough, a diaphragm disposed on said second valve section for closing said flow passage, a valve cover plate disposed adjacent to said diaphragm and defining a chamber therewith, said third valve section being movable so that the first port is isolated from said second port but is coupled to said chamber when the control means is in said first position and moves to said second position and means for coupling said third valve section to said first valve section such that as the control means reverts to said first position it moves both the first and third sections relative to said second section and the first port is coupled to said second port by said port connecting means but isolated from said chamber.

4,253,422

CAGE REINFORCEMENT SYSTEM

Eddie L. Holland, Roswell, and Charles A. White, Woodstock, both of Ga., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 22, 1980, Ser. No. 114,220
Int. Cl.[3] A01K *31/06*
U.S. Cl. 119—17 **2 Claims**



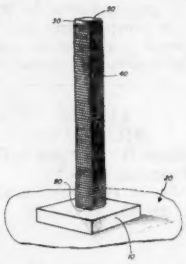
1. In an egg-layer cage assembly comprising a plurality of vertically spaced, elongated wire mesh cage rows mounted on opposite sides of and extending between a pair of frames having upwardly, inwardly extending legs, said cages having floors which slant downwardly and outwardly to openings along the opposed fronts thereof to permit the egress of eggs therefrom, the uppermost of said rows vertically stabilizing the rows therebelow intermediate said frames by means of support wires extending between and interconnected to the vertically displaced cage rows, the uppermost of said rows having the interior bottom back walls thereof in contact with one another, said back walls diverging upwardly, the improvement comprising stabilizing struts positioned intermediate of said frames and extending between said upper rows of cages, said stabilizing struts comprising rigid members having means on the working extremities thereof to receive and retain parts of the wire mesh back walls of said upper rows of cages, said members receiving and being compressed between parts of said back walls near the upper extremities thereof to prevent such upper extremities from converging toward one another under the load placed on said upper rows from the birds contained therein and the force exerted by said support wires from the cage rows therebelow, thereby preventing rotation of said cage rows and the consequent lessening of the slant of the cage floors.

4,253,423

CAT SCRATCHING AND CLIMBING POST

Michael L. Kaplan, 45 Pond St., Marblehead, Mass. 01945

Filed Jun. 26, 1979, Ser. No. 52,132
Int. Cl.[3] A01K *15/00*
U.S. Cl. 119—29 **5 Claims**



1. A portable scratching and climbing post for a cat comprising:

(a) a horizontal base having a flat lower surface, said lower surface adapted to rest unattached on the underlying ground or floor;

(b) a vertical elongated column attached to and extending upwardly from said horizontal base, the sides of said column being aperture-free;

(c) said vertical column being free of lubricants, fluids, or the like within its interior;

(d) said vertical column being a single unit having a cap-free upper end; and

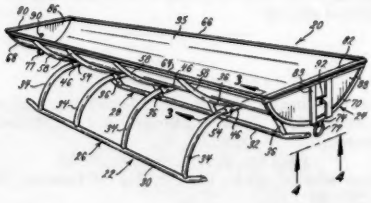
(e) an elongated length of dry unlubricated rope, said rope being helically wound around and fixed to the exterior side surface of said column, said rope extending from closely adjacent to said base to closely adjacent to said upper end, each helical loop of rope being closely spaced relative to its adjacent loops of rope.

4,253,424

INVERTIBLE FEED BUNK

Galen Williams, Pittsburg, Kans., assignor to Harvest Industries, Inc., Wilmette, Ill.

Filed Aug. 3, 1979, Ser. No. 63,364
Int. Cl.[3] A01K *5/01*
U.S. Cl. 119—61 **12 Claims**



1. A bunk for feeding animals feed above the ground when the bunk is in an upright position, comprising:

(a) a rigid base supported upon the ground when the bunk is in the upright position; and

(b) a rigid trough having means for being detachably supported upon the base when the bunk is in the upright position, the base and trough being shaped to have means for conforming to the shape of one another so that from the upright position the trough can be detached from the base and inverted relative to the base, and the base and trough fitted together so that one fits substantially within

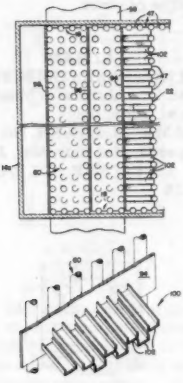
the other and the base reconnected to the said means on said trough.

4,253,425

INTERNAL DUST RECIRCULATION SYSTEM FOR A FLUIDIZED BED HEAT EXCHANGER

Robert L. Gamble, Wayne, and Juan A. Garcia-Mallol, Morristown, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jan. 31, 1979, Ser. No. 8,019
Int. Cl.[3] F22B *1/02*
U.S. Cl. 122—4 D 10 Claims



1. A heat exchanger comprising a housing, means establishing at least one bed of particulate material containing fuel in said housing, means for passing air through said bed to fluidize said material and promote the combustion of said fuel, a water circulation system located in said housing and adjacent said bed and including a series of water circulation tubes connected to at least one drum, means to direct the effluent gases from said fluidized bed over said tubes to add heat to the water in said tubes, baffle means disposed in said housing and located in the path of said gases as said gases pass from said bed and across said tubes for separating the solid particulate material from said gases, said baffle means comprising a plurality of elongated members extending between said tubes and said bed, said members being spaced apart to permit said gases to pass therebetween, means located in said housing and adjacent said bed for collecting the separated particulate material, and means for injecting said separated particulate material back into said bed.

4,253,426

RESERVOIR TYPE WATER HEATING DEVICE

Atsuyoshi Nishi; Hiroyasu Kuwazawa, and Kaneyoshi Oshima, all of Nakatsugawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1978, Ser. No. 953,253
Claims priority, application Japan, Oct. 25, 1977, 52-143062
Int. Cl.[3] F22B *5/00*
U.S. Cl. 122—13 R 16 Claims

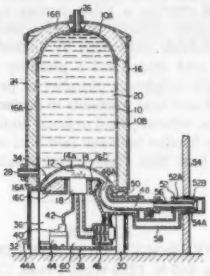
1. A reservoir type water heating device comprising:

a closed end drum having a hot water reservoir located therein for accumulating a specified quantity of water, said drum including a convex shaped heated surface member at the bottom which is convex toward the interior thereof through which said water is heated;

a water feed pipe connected to and communicating with said hot water reservoir for supplying cold water to said reservoir and located at the lower portion of said drum at the same vertical level to said convex shaped heated surface member for having said water strike against the lateral side of said convex shaped heated surface member for slowing the flow speed of said cold water and preventing mixing of said cold water with hot water at a higher portion in said closed end drum;

a hot water pipe for supplying hot water from said reservoir connected to and communicating with said reservoir at the top thereof for having said hot water forced upward and out through said hot water pipe by said cold water supplied at the lower portion of said drum;

fuel combustion means disposed outside of said hot water



reservoir and below said reservoir, said fuel combustion means having a combustion chamber at the bottom of said drum for heating water within said reservoir through said convex shaped heated surface member and thereby having combustion products formed within said chamber; and

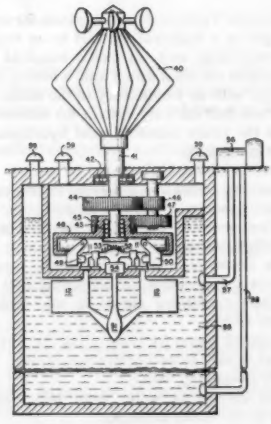
an exhaust passageway directly connected to said combustion chamber for exhausting said combustion products from said chamber, said exhaust passageway being disposed and extending away from said chamber in spaced relationship with said reservoir so as to not come in contact with said water.

4,253,427

HEAT EXCHANGING SYSTEM

Freidrich Weinert, 219-19 131st Ave., Jamaica, N.Y. 11413

Filed Oct. 15, 1979, Ser. No. 84,705
Int. Cl.[3] F22B *3/06*
U.S. Cl. 122—26 3 Claims



1. Heat exchanging system comprising a heat expansible organic liquid, at least one pressure cell containing the liquid, said pressure cell being adapted to be heated to heat the or-

ganic liquid, valve means connected to said pressure cell for controlling flow of the organic liquid into and out of said pressure cell to maintain predetermined pressure in the cell, at least one heat exchanger connected to said pressure cell through said valve means for transferring heat of the organic liquid to another medium, said heat exchanger including a pressure valve for spraying the organic liquid thereinto, cooling means for cooling organic liquid flowing from the heat exchanger, and pump means for circulating the cooled organic liquid to said pressure cell through said valve means with a relatively high pressure; and a heating system, said heating system comprising a rotational shaft, means for operating said shaft by natural energy, a rotor connected to said shaft, a plurality of weights slidably situated within said rotor, said weights being slidable outwardly by centrifugal force due to the rotation of said rotor, and a plurality of heat segments connected to said weights, a plurality of pressure cells being arranged around said heat segments to contact therewith when said rotor rotates, whereby said organic liquid is heated in said pressure cells by friction between said heat segments and pressure cells, and heat thus created is exchanged in each heat exchanger.

4,253,428

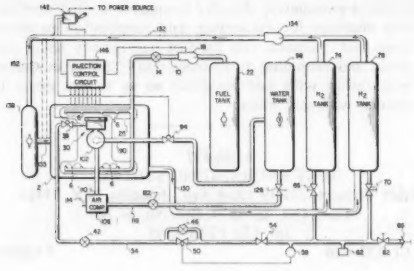
HYDROGEN FUEL SYSTEMS

Roger E. Billings, 865 N. 1250 West, Provo, Utah 84601; Ronald L. Woolley, 427 E. 1070 South, and Vaughn R. Anderson, 217 N. 260 West, both of Orem, Utah 84057

Filed Dec. 29, 1978, Ser. No. 974,325

Int. Cl.[3] F02B *43/08*

U.S. Cl. 123—1 A **5 Claims**



1. A hydrogen/hydrocarbon fuel system for supplying either hydrogen gas or a hydrocarbon fuel to an engine which includes a combustion unit, an intake manifold for supplying received fuels to the combustion unit, a mixing unit for mixing hydrogen gas with air for delivery to the intake manifold, and a hydrocarbon fuel delivery system for delivering hydrocarbon fuel to the intake manifold, said hydrogen/hydrocarbon fuel system comprising:

means for containing hydrogen,

first conveying means for conveying hydrogen gas from said containing means to said mixing unit,

first control means for controlling the flow of hydrogen gas in said first conveying means,

means for containing hydrocarbon fuel,

second conveying means for conveying fuel from said hydrocarbon containing means to said hydrocarbon fuel delivery system.

second control means for controlling the flow of hydrocarbon fuel in said second conveying means,

means for containing water,

means for conveying water from said water containing means to the intake manifold,

third control means for allowing the flow of water in said water conveying means,

air compressor means coupled to said water containing means by a conduit for creating a pressure within said water containing means, said pressure causing water to flow from said water containing means to the intake manifold through said water conveying means, and

manually operable temperature independent two-position switch means responsive to a first switch setting for signaling said first control means to allow the flow of hydrogen gas, for signaling said second control means to prevent the flow of hydrocarbon fuel, and for signaling said third control means to allow the flow of water, and responsive to a second switch setting for signaling said first control means to prevent the flow of hydrogen gas, for signaling said second control means to allow the flow of hydrocarbon fuel, and for signaling said third control means to prevent the flow of water.

4,253,429

PISTON FOR INTERNAL COMBUSTION ENGINES

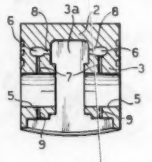
Ercole Galli, Turin, Italy, assignor to Mondial Piston Dr. Galli Ercole & C.S.p.A., Turin, Italy

Filed Mar. 20, 1979, Ser. No. 22,137

Claims priority, application Italy, Mar. 22, 1978, 67626 A/78

Int. Cl.[3] F01P *1/04, 3/06*

U.S. Cl. 123—41.35 **3 Claims**



1. A piston for an internal combustion engine, said piston having a crown portion and a cylindrical skirt portion, formed in one piece with the crown portion,

two wall regions of said cylindrical skirt portion being of increased wall thickness with respect to the remainder of said cylindrical skirt to form diametrically opposed bosses,

means defining respective radial holes in said bosses, said radial holes being axially aligned with one another for receiving and supporting respective ends of a gudgeon pin,

means defining an inner chamber in each said boss, said inner chambers being located completely within said bosses in that part of said bosses between said radial hole and said crown of said piston, and having central portions of said inner chambers disposed on a diameter of said piston perpendicular to the axis of the piston and parallel to the axis of said holes,

means defining first and second ducts within said cylindrical skirt portion of said piston, said first ducts communicating between said inner chamber and said radial holes for said gudgeon pin, and said second ducts communicating between said inner chambers and said interior cavity of said piston.

4,253,430

INSULATED OIL COOLED PISTON ASSEMBLY

Robert F. Garter, Dearborn, and Nshan Hamparian, Brighton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1979, Ser. No. 2,540

Int. Cl.[3] F01P *1/04, 3/06;* **F01B** *31/08;* **F02F** *3/20*

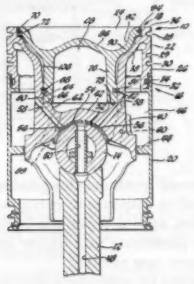
U.S. Cl. 123—41.38 **6 Claims**

1. An oil cooled piston assembly for an internal combustion engine, said assembly comprising

a body member having an outer generally cylindrical ring belt section connected near its upper edge with a depend-

ing cup shaped supporting wall integral with a piston pin connecting section below said wall, said wall and said ring belt section defining an annular cooling oil cavity therebetween for receiving cooling oil to cool said ring belt section, said wall defining inwardly thereof a cup shaped recess having a closed bottom forward by said piston pin connecting section and adapted to receive an axially symmetrical insert, and

a separate combustion bowl member received within said recess, said bowl member having a depending columnar section with an open bottom received against the bottom of said recess, a central bowl section extending inwardly



from the upper edge of the columnar section and closing the top thereof to form a central chamber without direct cooling by coolant in said cooling oil cavity, and a peripheral bowl section extending outwardly and upwardly from said columnar section upper edge,

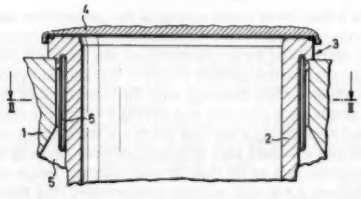
said peripheral bowl and columnar sections together defining a continuous outwardly and upwardly flared inner wall generally parallel to said body member supporting wall, said walls being in engagement at their lower ends and spaced apart intermediate their ends to define an insulating air gap to limit heat loss from the combustion bowl member to the oil cooled wall of the body member.

4,253,431

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE WITH AT LEAST ONE CYLINDER BUSHING

Hermann Mettig, Cologne, and Rudolf Jeschar, Clausthal-Zellerfeld, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 25, 1978, Ser. No. 927,884
Int. Cl.³ F02F *1/10*
U.S. Cl. 123—41.72 **4 Claims**



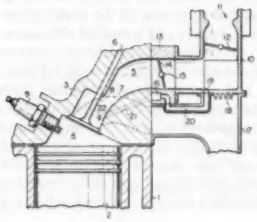
1. A water cooled reciprocating piston internal combustion engine which includes: an engine frame, a cylinder bushing inserted in said engine frame and having one end provided with a collar and being supported by said engine frame, said bushing together with said engine frame defining an annular chamber adapted to receive cooling water, a mantle-formed heat jacket arranged with said cylinder bushing and having a wall portion defining an inner surface and an outer surface thereof arranged for contact with the content of said annular chamber, said heat jacket extending from the cooling water chamber, said at least into the vicinity of said collar and while being arranged to receive and keep contained a liquid heat carrier therein having its inner surface arranged as means to create a capillary effect internally to permit such liquid heat carrier in said heat jacket to flow therein against the force of gravity in the longitudinal direction of and along said cylinder bushing for improved heat dissipation in the upper thermally highly loaded region of the bushing which must be cooled intensively so that rigidity and strength of the cylinder bushing is uninfluenced, wherein substantially all of said inner surface rests against said bushing and said outer surface projects into said cooling water chamber that receives cooling water.

4,253,432

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE OF A COUNTER-FLOW TYPE

Hidetaka Nohira, Mishima; Toshiaki Konomi, and Hideaki Matsui, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 28, 1979, Ser. No. 24,514
Claims priority, application Japan, May 22, 1978, 53-59894
Int. Cl.³ F02B *15/00*
U.S. Cl. 123—52 M **19 Claims**



1. A multi-cylinder internal combustion engine having a plurality of cylinders each having a combustion chamber, an intake port, an intake valve, and an exhaust port, said engine comprising:

an intake manifold comprising a collecting portion having an inlet, and a plurality of manifold branches branched off from said collecting portion, each of said manifold branches being connected to the intake port of a corresponding one of the cylinders;

a carburetor having a throttle valve and arranged in the inlet of said collecting portion;

at least one auxiliary intake passage, common to at least two cylinders and having an inlet which opens into said collecting portion and an outlet;

at least two auxiliary branch intake passages branched off from the outlet of said auxiliary intake passage, each of said auxiliary branch intake passages having an outlet which opens into the intake port of a respective one of said at least two cylinders; and

secondary valve means arranged in each of said manifold branches and opened in accordance with a reduction in the level of vacuum in said intake manifold.

4,253,433

STRATIFIED-CHARGE TWO-STROKE INTERNAL COMBUSTION ENGINES

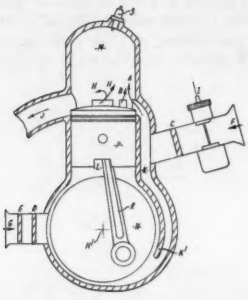
Gordon P. Blair, Belfast, Northern Ireland, assignor to The Queens University of Belfast, Belfast, Northern Ireland

Filed May 11, 1979, Ser. No. 38,052

Claims priority, application United Kingdom, May 12, 1978, 19128/78

Int. Cl.³ F24B *13/04*

U.S. Cl. 123—73 R **9 Claims**



1. A stratified-charge two-stroke internal combustion engine comprising: a combustion chamber having an exhaust port, a first inlet port, and a second inlet port positioned closer to said exhaust port than said first inlet port; a piston reciprocable in said combustion chamber; a crankcase chamber; a first duct extending from the first inlet port in the combustion chamber to a position in the crankcase chamber remote from said combustion chamber; a first admission port connecting with said first duct at a position intermediate its ends for introducing a fuel-air mixture into said first duct; a second duct extending between the second inlet port in the combustion chamber and said crankcase chamber; and a second admission port communicating with said crankcase chamber for introducing air into said crankcase chamber, communication between said combustion chamber and said crankcase chamber through said first and said second ducts being controlled by movement of said piston, the arrangement of said first and second second inlet portions being such that air introduced into said combustion chamber through said second duct substantially separates a fuel-air mixture introduced into said combustion chamber through said first duct from gases being exhausted through said exhaust port.

4,253,434

VARIABLE VALVE EVENT ENGINE

Masaaki Takizawa, Mishima, and Noboru Matsubara, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 20, 1978, Ser. No. 917,242

Claims priority, application Japan, Apr. 21, 1978, 53/46702

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.15 **13 Claims**

1. A variable valve event engine, comprising:

(a) a rocker shaft disposed along said engine;

(b) a rocker arm for actuating a valve of said engine, said rocker arm being pivotably and slidably disposed on said rocker shaft;

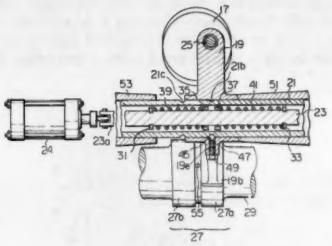
(c) a camshaft disposed parallel to said rocker shaft and synchronized to a crankshaft of said engine;

(d) a plurality of adjacent cams having cam profiles different from each other fixed on said camshaft so as to be adjacent to each other;

(e) a rocker arm slide shaft disposed parallel and longitudinally moveable with respect to said rocker shaft;

(f) spring force means interconnecting said rocker arm with said rocker arm slide shaft for storing energy and for longitudinally moving said rocker arm from one predetermined position to another predetermined position on said rocker shaft when said stored energy exceeds a predetermined force

(g) overcomeable force means imposing said predetermined force for releasably securing said rocker arm in different



predetermined positions longitudinally spaced on said rocker shaft in response to energy changes in said spring force means, each said position being aligned with one of said cams permitting said rocker arm to cooperate with said different cam profiles;

(h) power means for selectively storing energy in said spring force means to cause movement of said rocker arm from one of said cams to another.

4,253,435

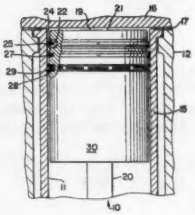
DIESEL ENGINE AND PISTON ASSEMBLY THEREFOR

James C. McCandless, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 880,417, Feb. 23, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,673

Int. Cl.³ F02F *3/02*

U.S. Cl. 123—193 P **9 Claims**



1. In a four cycle diesel engine in the automotive size range and having a plurality of cylinders, each of said cylinders being closed on one end by a cylinder head and having a three ring reciprocating piston slidably received therein, said piston having an upper surface defining, with the closed end of the cylinder, a combustion chamber and having a periphery including a top land intersecting a top ring groove, a second ring receiving groove and a second land disposed between said top and second grooves, and an oil ring groove disposed below said second groove, a top split annular compression ring mounted in said top groove and having a cold end clearance, a second split annular compression ring mounted in said second groove and having a cold end clearance, and an oil control ring mounted in said oil ring groove, the improvement wherein said second ring cold end clearance is at least three times larger than said top ring cold end clearance, comparing equal points in the tolerance range for each ring, and the volume of the annulus defined by said compression rings, said cylinder and said second land being effective to achieve low carbon deposit formation

on said piston top land during engine operation and being in the range from about 0.12 cubic inches to about 0.35 cubic inches.

4,253,436

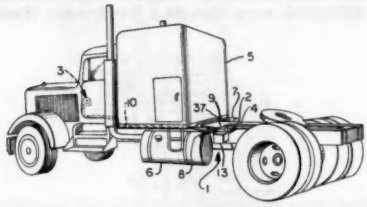
FUEL ADDITIVE SYSTEM FOR VEHICLES

Lawrence L. Dudrey, Rte. 1, Box 165, Hartford, Kans. 66854

Filed Jun. 21, 1979, Ser. No. 50,964

Int. Cl.³ F02M *43/00*

U.S. Cl. 123—198 A **8 Claims**



1. A liquid fuel and additive mixing apparatus for accurately proportioning the liquid additive into the liquid fuel for a vehicle and the like, comprising:

(a) a vehicle having an engine, an electrical system, an operator cab and a fuel tank for containing a quantity of fuel for the engine;

(b) a reservoir means mounted on the vehicle for containing a quantity of liquid additive which is a multiple of the quantity thereof required for mixing with a full tank of fuel;

(c) means for removing said additive from the reservoir means and injecting a quantity thereof into the fuel tank at a predetermined rate and time to proportion said additive delivered to the fuel tank relative to fuel introduced therein; said additive injecting means including pump means arranged for drawing additive from the reservoir means, means for controlling the pump output to a constant pressure and predetermined flow rate, a conduit from a pump outlet to the fuel tank, and a control valve in said conduit controlling the period of flow of additive injected into the fuel tank; and

(d) means for automatically controlling delivery of said additive to the fuel tank and including means for operating said pump means and said valve and including a timing means set in accordance with the quantity of fuel introduced into the fuel tank whereby operation of the pump means and opening of the valve is limited to a proportional time period for injecting the quantity of additive which is proportional to the quantity of fuel introduced into the fuel tank.

4,253,437

FUEL CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Tsutomu Haramoto, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

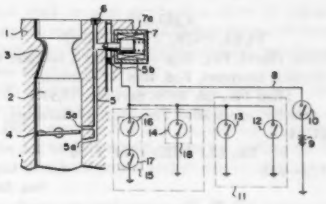
Filed Jan. 25, 1979, Ser. No. 6,880

Claims priority, application Japan, Jan. 30, 1978, 53-10236[U]

Int. Cl.³ F02M *11/00*

U.S. Cl. 123—325 **9 Claims**

1. Fuel control means for vehicle engines which comprises slow fuel passage means for providing supply of fuel for slow engine operation, valve means provided in said slow fuel passage means and having an open and closed position, means for sensing deceleration of the engine and actuating the valve means to close the slow fuel passage means when the engine deceleration is sensed, characterized by fuel supply recovery means for detecting whether an engine operating condition is below a first predetermined value, whether the engine operating condition is below a second, lower predetermined value which is closer to engine idling condition than the first predetermined value and whether vehicle brake means is actuated and maintaining the valve means in the closed position when the vehicle brake means is actuated as long as the engine operating condition is above the second predetermined value and



moving the valve means to the open position when the engine is decelerated either below the second predetermined value independent of brake means actuation or between the first and second predetermined values when the vehicle brake means is not actuated.

4,253,438

RPM REGULATOR FOR FUEL INJECTION PUMPS WITH AN ADAPTATION OF THE INJECTION QUANTITY

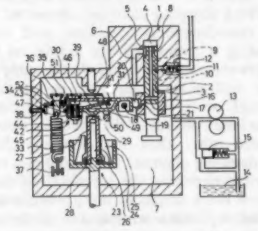
Karl Zibold, Asperg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,235

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802888

Int. Cl.³ F02D *31/00*; F02M *41/00*

U.S. Cl. 123—366 **16 Claims**



1. In an improved rpm regulator of a fuel injection pump for internal combustion engines, including: a housing; a fuel quantity setting member; a starting lever, one end of which engages the fuel quantity setting member; a drag lever mounted relative to said starting lever; a pivot shaft which pivotably mounts the starting lever to the injection pump; a first stop mounted on said drag lever; a main control spring; means for mounting one end of said control spring to said housing; means for arbitrarily changing the force exerted by the main control spring; a starting spring mounted between said starting lever and said drag lever in series with the main control spring and being deformable up to the first stop; an rpm governor mounted to said housing which engages the starting lever and exerts an rpm-dependent force in opposition to the forces of the main control spring and the starting spring, and a further spring deformable up to the first stop and provided in parallel to the starting spring for adaptation of the fuel injection quantity, the improvement comprising:

a supplementary lever supported by said drag lever, said supplementary lever comprising a second stop, said second stop cooperating with said starting lever, by which the starting lever can be blocked in the direction of the

first stop, at least in the full load range from the time an adaptation rpm is reached and before the first stop is reached;

a third stop supported by said housing, said third stop cooperating with said supplementary lever and serves as a full load stop for controlling said second stop.

4,253,439

FUEL INJECTION PUMP

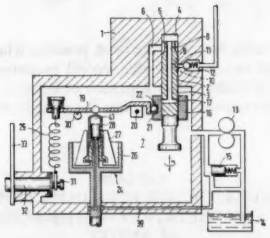
Gerald Höfer, Flacht, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 15,993

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813111

Int. Cl.³ F02D *1/04, 1/06*

U.S. Cl. 123—368 **5 Claims**



1. A fuel injection pump for internal combustion engines having a fuel delivery pump generating an rpm-dependent pressure and having an rpm governor, said governor including a tension lever for actuating a quantity control member which is engaged in the direction of decreasing injection quantity by a governor sleeve provided with a longitudinal bore by means of which it is slidable in sealingly manner on a tang and enclosing in said bore a damping chamber connected via a bore to surrounding rpm-dependent pressure, said rmp-dependent pressure creating a damping force acting on the governor sleeve, the governor sleeve being displaceable by means of flyweights as well as by a regulator spring whose force is variable through an adjustment lever characterized by the provision of at least one area of the governor sleeve exposed to a second force other than the damping chamber force, whereby the damping chamber force applies a resulting force on the governor sleeve in the direction of decreasing fuel quantity, which force displaces the governor sleeve toward downward fuel regulation irrespective of the action of the flyweights at the idling position of the adjustment lever but at a higher rpm than the idling rpm.

4,253,440

FUEL SUPPLY APPARATUS FOR INTERNAL COMBUSTION ENGINES

Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Ohbu, both of, Japan

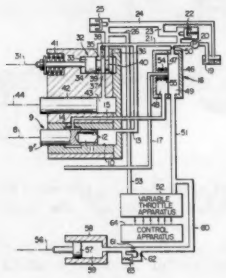
Filed Jul. 7, 1978, Ser. No. 922,852

Claims priority, application Japan, Jul. 15, 1977, 52-84847

Int. Cl.³ F02M *57/04, 57/00*

U.S. Cl. 123—442 **5 Claims**

1. In a fuel supply apparatus for an internal combustion engine, including an intake conduit having a throttle valve disposed therein and an air valve disposed upstream of said throttle valve defining an air pressure chamber therebetween; air valve control means for maintaining the pressure prevailing in said air pressure chamber at a preset value; fuel supply means for supplying fuel to said intake conduit at a constant pressure; metering means for metering fuel in proportion to the opening degree of said air valve; and fuel pressure differential means for maintaining the pressure difference produced in said fuel metering means at a preset value; the improvement comprising pressure signal generating means for generating a pressure signal corresponding to the operation of said throttle valve, said pressure signal generating means comprising a cylinder having a piston interlocked with said throttle valve and slidable within said cylinder so that a variable volume chamber is defined within said cylinder; and pressure signal response means for acting in response to the level of said pressure signal for automatically controlling the air-fuel ratio during acceleration and deceleration of the engine, said fuel pressure differential means includes a first pressure chamber for



receiving the pressure downstream of said fuel metering means, a second pressure chamber maintained at a predetermined pressure and a constant differential pressure valve downstream of said fuel metering means, said constant differential pressure valve being activated in response to pressure differences between said first and second pressure chamber to control the pressure downstream of said fuel metering means so as to maintain said pressure difference between said first and second pressure chambers constant, and wherein said variable volume chamber is communicated with said second pressure chamber through a fixed orifice and a series connection in parallel therewith, said series connection including a second fixed orifice and a check valve for preventing fluid flow from said variable valve chamber to said second pressure chamber.

4,253,441

FUEL SUPPLY SYSTEM FOR MULTI-CYLINDER ENGINE EQUIPPED WITH FUEL INJECTOR

Yoshihisa Kawamura, Fujisawa; Mitsumasa Inoue, Yokohama, and Masaaki Saito, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 7, 1979, Ser. No. 18,006

Claims priority, application Japan, Mar. 22, 1978, 53/31673

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—445 **6 Claims**

1. A fuel supply system for a multi-cylinder internal combustion engine, comprising:

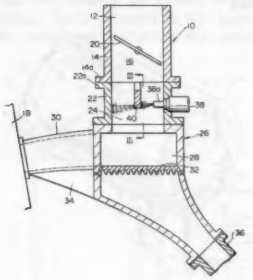
means defining an intake passageway through which intake air is inducted into the engine cylinders of the engine, a part of said intake passageway being defined in a riser portion of an intake manifold, said intake passageway being provided therein with a throttle valve which is rotatable to control the amount of the intake air inducted into the engine cylinders and located upstream of said riser portion;

a fuel injector whose nozzle is located in said intake passageway;

a fuel reflector against which at least a part of the fuel injected from said fuel injector strikes to be reflected, said fuel reflector being located opposite to the tip of the nozzle of said fuel injector, said fuel reflector including a flat fuel reflector member having a body section which is

secured to said intake passageway defining means so that at least a part of fuel injected from said fuel injector strikes against said flat fuel reflector member; and

means for decreasing the size of fuel droplets which drop from the lower portion of said flat fuel reflector member



toward said riser portion, said decreasing means including a sharp-pointed portion integral with said flat fuel reflector member which portion is located at the downstream side of the intake passageway relative to the body section of said flat fuel reflector member.

4,253,442

IGNITION SYSTEM WITH IMPROVED TEMPERATURE AND VOLTAGE COMPENSATION

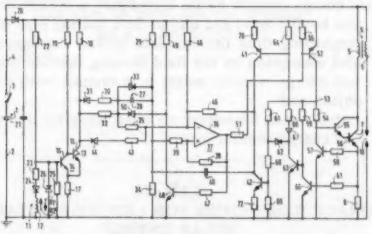
Werner Jundt, Ludwigsburg; Bernd Bodig, Leinfelden; Gerd Höhne, Ludwigsburg; Georg Pfaff, Asperg; Gerhard Söhner, Remshalden, and Bernd Kalkhof, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,878

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833434

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—618 **11 Claims**



1. In an ignition system for an internal combustion engine having a rotating shaft, said ignition system having an ignition coil (6) having a primary winding (5), ignition switch means (7) connected in series with said primary winding, signal generator means (11) operatively associated with said shaft of said engine for furnishing a position signal indicative of the rotary position of said shaft relative to a reference position, control switch means (13) connected to said signal generator means and having a conductive state while said position signal is indicative of rotation of said shaft through a first angle of rotation and a blocked state while said position signal is indicative of rotation of said shaft through a second angle of rotation immediately following said first angle of rotation, storage means connected to said control switch means so that the storage signal stored in said storage means changes in a first direction while said control switch means is in said conductive state and in a second direction at a predetermined rate while said control switch means is in said blocked state, threshold means (37) connected to said storage means for furnishing a threshold output signal adapted to switch said ignition switch to the conductive state when the threshold of said threshold means is reached by said storage signal during said change in said second direction and for maintaining said ignition switch means in said conductive state until said control switch means is switched back to said conductive state: p1 apparatus for maintaining the energy stored in said ignition coil substantially independent of variations of predetermined operating parameters of said system, comprising

means (8) for furnishing a monitoring signal indicative of the current flowing through said primary winding;

means (40) connected to said monitoring signal furnishing means and said threshold means for shifting the threshold of said threshold means under control of said monitoring signal; and

storage charge control means (48, 49, 50) connected to said threshold means for substantially increasing said predetermined rate in response to said threshold output signal.

4,253,443

INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

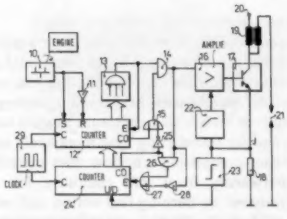
Karl Seeger, Ditzingen; Walter Ruf, Schwieberdingen; Gerhard Söhner, Remshalden, and Werner Jundt, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 4, 1980, Ser. No. 109,625

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900480

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—609 **8 Claims**



1. Internal combustion engine ignition system having

an ignition coil (19);

a controlled semiconductor switch (17) serially connected with the primary of the ignition coil;

at least one spark gap (21) connected to the secondary of the ignition coil;

a pulse generator (10) coupled to the engine (E) and driven thereby and providing needle pulses having a predetermined time relation to the angular position of the crankshaft of the engine;

and connection means including at least one counter (12) and switch closing and switch opening control circuit means controlled by the count state of the counter and connecting said pulse generator (10) and the switch (17) to control the switch to close at a predetermined time and permit current flow through the coil and then to open, and cause generation of an ignition event,

wherein, in accordance with the invention,

a first pulse from the pulse generator means is applied

(a) to said counter means to cause the semiconductor switch (17) to open and

(b) to initiate a count cycle of the counter;

and a logic circuit (11, 13, 14) is provided, connected to both said pulse generator and the counter (12) and controlling the switch (17) to close if either:

(c) the counter has reached a predetermined count state or

(d) a subsequent pulse is applied by the pulse generator even if the counter has not yet reached said predetermined count state.

4,253,444

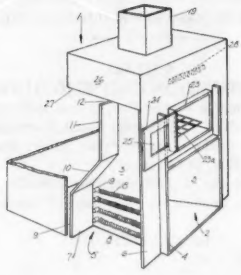
ELECTRIC FURNACE FIREPLACE

Richard Johnson, 1545 W. Pekin Rte.#2, Lebanon, Ohio 45036

Filed May 17, 1978, Ser. No. 906,824

Int. Cl.[3] F24C *1/14*; F27D *11/00*

U.S. Cl. 126—6 **4 Claims**



1. An electric furnace fireplace comprising:

(a) A combustion chamber defining a forwardly opening fireplace enclosure having a lower horizontal surface for supporting combustible fuel, the side and rear walls of said enclosure defining heat exchange and reflecting means for reflecting heat within said enclosure toward said forward opening and for transferring heat to adjacent air plenums;

(b) Flue means comprising a hollow duct extending generally upwardly from said enclosure for exhausting fumes produced by burning fuel within said enclosure;

(c) A pair of duct-like air plenums positioned on either side of said enclosure, said heat exchange means formed by said side walls of said enclosure being operative to transfer heat from fuel burned within said enclosure to air moving through said side plenums, each of said side plenums having an inlet for introducing air into said side plenum and an outlet for exhausting heated air from said side plenum to a warm air trunk line.

(d) A duct-like air plenum positioned adjacent the rear wall of said enclosure, said heat exchange means formed by said rear wall of said enclosure being operative to transfer heat from fuel burned within said enclosure to air moving through said rear plenum, said rear plenum including outlets communicating with said side plenum inlets, and an inlet for introducing unheated air into said rear plenum from a cold air return line;

(e) At least one electric heating element positioned within at least one of said side plenums adjacent said heated air outlet for heating air moving through said plenums;

(f) A flat-bottomed water tank surrounding said flue and positioned above said enclosure such that heat produced within said enclosure by burning fuel and exhausted through said flue operates to raise the temperature of said tank bottom and the portion of said tank adjacent said flue for heating water contained within said tank; and

(g) An electric heating element contained within said tank for heating water therein.

4,253,445

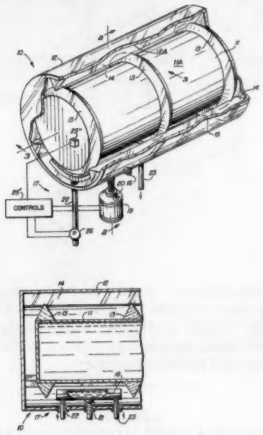
CONCENTRATING VACUUM INSULATED SOLAR ENERGY COLLECTION APPARATUS

Pryce Wilson, 2510-1/2 N. 7th St., Phoenix, Ariz. 85018

Filed Apr. 19, 1979, Ser. No. 31,467

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—422 **9 Claims**



1. An improved heat exchange means comprising:

a pair of concentrically arranged inner and outer spaced, closed objects,

said inner object comprising a material to be heated by solar rays impinging on at least a part of its outer periphery,

the space between said objects containing less than atmospheric pressure therein,

the periphery of said outer object being at least partially transparent for transmitting solar rays to said inner object,

an energy transfer means arranged within the space between said objects for selectively moving into contact with and away from the outer periphery of said inner object,

said energy transfer means comprising a hollow configuration having input and output fluid bearing pipe means for conducting fluid through said hollow configuration for heat absorption by the fluid flowing therethrough when said energy transfer means is in contact with said inner object, and

a control means for selectively controlling the movement of said energy transfer means.

4,253,446

STORAGE RESERVOIRS FOR LIQUIDS HEATABLE BY SOLAR ENERGY

Bernd Müller, Diekholzen, Fed. Rep. of Germany, assignor to Vama Vertrieb von Anlagen und Maschinen GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,065

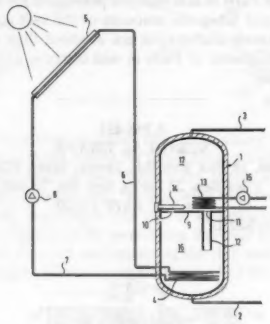
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712822

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—435 **9 Claims**

1. A domestic hot water heater comprising: an upright tank having a cold water inlet adjacent the bottom of the tank and a hot water outlet adjacent the top of the tank; a separating wall spaced from the bottom and the top of the tank and defining and separating an upper tank chamber and a lower tank chamber, the wall including only two, first and second, spaced apart apertures in respective quadrants of a surface of said wall which fluidly connect the chambers; a flow tube in communication with the first aperture and having a length at least equal to half the depth of the lower tank chamber and extending

from said wall towards the tank bottom for guiding cold water from the upper tank chamber into the lower tank chamber; a heat exchanger positioned in the lower chamber proximate the tank bottom including means for connecting the heat exchanger to a solar energy receiving fluid circuit so that heated fluid from the circuit can flow through the heat exchanger to thereby heat the cold water in the vicinity of the bottom of the tank; and auxiliary heating means in the upper chamber for maintaining the water temperature in the upper chamber at a



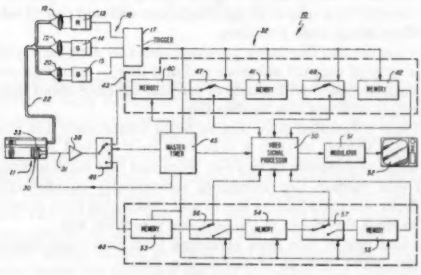
predetermined level above the ambient temperature; whereby the water temperature in the lower tank chamber proximate the tank bottom and the heat exchanger is at all times the lower water temperature in the tank so as to maximize the temperature gradient between the heat exchanger operated with solar energy and the surrounding water and to thereby maximize the efficiency of the heat exchanger, and whereby further water at the predetermined temperature level can at all times be withdrawn from the heater.

4,253,447

COLOR ENDOSCOPE WITH CHARGE COUPLED DEVICE AND TELEVISION VIEWING

William C. Moore, Skaneateles; Richard W. Newman, Auburn, and Dominick Danna, Syracuse, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,653
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—6 **8 Claims**



1. An endoscope for providing color information in a form that is capable of being displayed on a standard format video receiver utilizing odd and even interlaced fields for each frame of information displayed, the endoscope including

a viewing head that is capable of being inserted into a body cavity that contains a self-scanning solid state imaging device for recording light images of objects positioned in the viewing region of the head and providing a line by line electrical read-out signal containing the recorded information,

lighting means for bringing illumination from a remote location into the viewing region of said viewing head to sequentially light the viewing region with light of primary colors during each field related period so that read-out signals relating to the color images recorded by the imaging device are clocked out of the device in a sequential flow relationship,

a first memory unit for individually storing read-out signals regarding each of the primary colors clocked out of the imaging device for display during an even field period,

a second memory unit for individually storing read-out signals regarding each of the primary colors clocked out of the imaging device for display during an odd field period, and

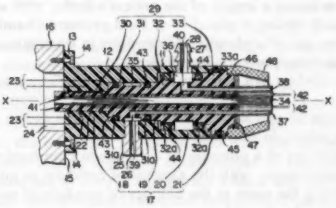
switching means for forwarding the signals stored in said first memory unit simultaneously to a transmitter matrix for combining the color information into composite luminance and chrominance signals for display in a standard format television receiver during an even field period and for forwarding signals stored in said second memory unit simultaneously to said matrix for display during an odd field period.

4,253,448

ENDOSCOPE CONNECTOR

Masaaki Terada, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,471
Claims priority, application Japan, Sep. 29, 1978, 53-120161
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **9 Claims**



1. In an endoscope having an operation section; an illumination optical fiber bundle, a fluid-feeding tube and a suction tube extending from said operation section; and endoscope connector connected to a console disposed externally of said endoscope and including a light source and a connection to an electric power source, said endoscope connector having a fluid-feeding fitting connected to said fluid-feeding tube and a suction fitting connected to said suction tube; and a protection tube surrounding said illumination optical fiber bundle, said fluid-feeding tube and said suction tube and having two ends, one end thereof being connected to said endoscope connector and the other end thereof being connected to said operation section, the improvement wherein said endoscope connector comprises:

a socket member comprising a socket body having a generally cylindrical bore penetrating therethrough and having two ends and said fluid-feeding and suction fittings mounted on said socket body, said socket member being connected to said console at a portion of said socket body to which one of said two ends of said bore opens;

a generally cylindrically plug member rotatably and sealingly inserted in said socket body and having two ends, said plug member having said illumination optical fiber passing therethrough and allowing both said fluid-feeding tube and said suction tube to extend therein from one of said two ends of the plug member which is remote from said one of said two ends of said bore and to which said other end of said protection tube is connected; and

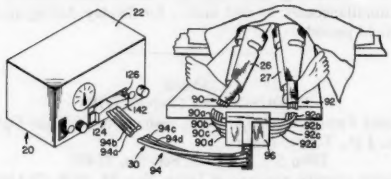
a pair of annular communication chambers defined between said socket body and said plug member to surround said plug member, one of said communication chambers being adapted to establish communication between said fluid-feeding fitting and said fluid-feeding tube and the other communication chamber being adapted to establish communication between said suction fitting and said suction tube, respectively.

4,253,449

COMPRESSION DEVICE WITH CONNECTION SYSTEM

Edward J. Arkans, Schaumburg; Larry D. Annis, Elgin, and Norbert W. Ellmann, Lake Zurich, all of Ill., assignors to The Kendall Company, Boston, Mass.

Filed Aug. 9, 1979, Ser. No. 65,392
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **31 Claims**



1. A device for applying compressive pressures against a patient's limb from a source of pressurized fluid, comprising:

a pair of first and second elongated pressure sleeves for enclosing a length of the patient's limbs, with said sleeves each having a plurality of fluid pressure chambers;

a first set of a plurality of conduits in communication with chambers in said first sleeve;

a second set of a plurality of conduits in communication with chambers in said second sleeve, with the number of conduits in said second set being the same as the number of conduits in said first set;

a third set of a plurality of conduits in communication with said source, with the number of conduits in said third set being the same as the number of conduits in said first and second sets; and

means for connecting the conduits of said third set with the conduits of said first and second sets with each conduit in the third set being connected to only one conduit in each of said first and second sets to establish communication between the source and the first and second sleeves.

4,253,450

PLASTER OF PARIS BANDAGES WITH CONTROLLED PROPERTIES FROM SYNERGISTICALLY SET-DELAYED AQUEOUS SLURRIES

David F. Smith, 101 Briny Ave., Ste. 607, Pompano Beach, Fla. 33062

Filed Oct. 23, 1978, Ser. No. 953,925
Int. Cl.³ A61F *13/04*; C04B *11/14*
U.S. Cl. 128—91 R **7 Claims**

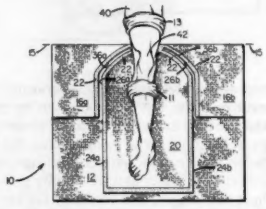
1. A bandage comprising a flexible, inert, porous, thin, dry backing material carrying about 180 to 250 grams per 4 inch by 5 yard bandage, including about 8 gram of backing, of the residue from evaporation to dryness thereon at about 180° to 250° F. of an aqueous slurry comprising the proportions of 1800 lbs. plaster of Paris and about 1029 lbs. water containing the following minor ingredients: (1) an amount of potassium sulfate equal to from 0.5 to 2.5% of the said weight of plaster of Paris (2) between 10 and 300 lbs. aqua ammonia of about 29.4 weight percent NH_3 (3) between 0 and 1500 grams boric acid dissolved in said aqua ammonia (4) between 100 and 1200 grams casein dissolved in said aqua ammonia (5) an amount of dextrin equal to from 0.3 to 1.8% of the said weight of plaster of Paris, said dextrin being of a type that is soluble from about 3% to 9% of its weight when stirred for 1 hr. in water at 25° C. and (6) a water-insoluble binding-agent-solid amount from 0.5 to 2% of the said weight of plaster of Paris and selected from at least one of the class consisting of polyvinyl alcohol, a water-dispersion of water-insoluble polyvinyl acetate with a softening-temperature in the range from 180° to 250° F., water-insoluble but water-wettable dextran and cooked starch; when the amounts of the said aqua ammonia, boric acid, casein and dextrin are at about the minima of their said amounts, setting of the plaster of Paris in said slurry is prevented for a minimum of about ½ hr. and when the amounts of the said aqua ammonia, boric acid, casein and dextrin are at about their said maxima, setting of the plaster of Paris in said slurry is prevented for at least 18 hours.

4,253,451

SURGICAL DRAPE

Alan Solomon, 16 Fox Run Rd., Dover, Mass. 02030

Filed Sep. 24, 1979, Ser. No. 78,043
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 D **5 Claims**



1. Surgical drape for use in hip or knee surgery that provides a substantially complete seal around the operative site in a one step application in which said drape has a substantially rectangular shape and is cut from a sheet made from a two-ply bonded fiber nonabsorbent material, said drape comprising:

(a) two main sections integrally connected along a main folding line;

(b) one main section being continuous along said main folding line;

(c) a second main section being trifurcated into a median flap and a pair of side flaps, with said median flap being connected to said main folding line along a narrow junction covered by a strip of surgical adhesive and said pair of side flaps along wide junctions;

(d) said median flap being provided about its periphery with a strip of surgical adhesive and said pair of said flaps are each provided with a strip of surgical adhesive about their edges adjacent said median flap;

(e) said trifurcated main section being folded onto said first main section in such a way that each of said strips of surgical adhesive faces away from said first main section;

(f) said median flap extending substantially equidistantly from said main folding line as said continuous main section extends therefrom in the opposite direction; and

(g) said pair of side flaps extending from said main folding line about midway of said median flap.

4,253,452

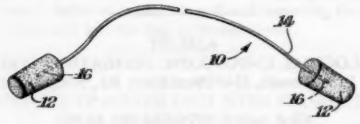
EAR PLUG ASSEMBLY

William R. Powers, Penns Grove, N.J., and William H. Lotter, Jr., Newark, Del., assignors to Specialty Composites Corporation, Newark, Del.

Filed May 24, 1979, Ser. No. 42,092
Int. Cl.³ A61F *11/00*
U.S. Cl. 128—152 **7 Claims**

1. An ear plug assembly comprising a pair of generally cylindrical plug body means adapted to be inserted into the ear

canal of an individual, each of said plug body means being made from an open cell resilient foam material having a slow recovery rate, a flexible cord of a length at least sufficient to extend from one ear of the user to the other ear and having a pair of free ends, and each said free ends of said cord being secured into a respective one of said plug body means by the method comprising the steps of inserting a piercing tool into said plug body means made from said open cell resilient foam



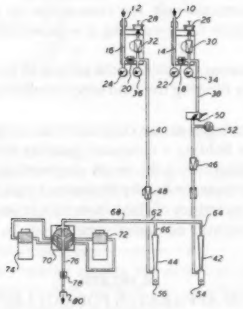
material having a slow recovery rate, maintaining the piercing tool in said plug body means for a sufficient period of time to distort the body thereat and temporarily create a hole corresponding to the piercing tool, withdrawing the piercing tool to expose the hole, inserting a free end of said elongated flexible cord into the exposed hole, permitting the hole to close upon the free end of the cord, and repeating the step with the second plug body means and the opposite free end of the cord.

4,253,453

SELECTOR VALVE FOR ANESTHESIA MACHINE

Wayne W. Hay, Madison, Wis., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 19, 1979, Ser. No. 86,385
Int. Cl.³ A61M *17/00*
U.S. Cl. 128—200.19 **6 Claims**



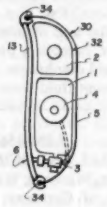
1. In an anesthesia machine comprising two anesthetic vaporizers each having an inlet and an outlet, inlet means for receiving a gas, outlet means for delivering said gas to a patient and a three-position selector valve means for controlling the flow of gas between said inlet means, said anesthetic vaporizers and said outlet means, the improvement comprising: said selector valve means having two extreme positions where either of said two anesthetic vaporizers are utilized and a middle position where no anesthetic vaporizer is utilized, said selector valve means having an input port communicating with said inlet means for receiving gas and an output port communicating with said outlet means for delivering a gas to a patient, said selector valve having a first intermediate inlet and outlet communicating, respectively, with the outlet and inlet of one of said vaporizers for providing a path of gas to said one vaporizer and receiving gas therefrom, and a second intermediate inlet and outlet communicating, respectively, with the outlet and inlet of the other of said vaporizers for providing a path of gas to said other vaporizer and receiving gas therefrom, said selector valve means providing a first flow path for gas received in said input port directly to said output port when said selector valve is in the middle position and further closing said first and second intermediate inlets and outlets to isolate said vaporizers from said direct path and from each other, a second flow path for gas received in said input port to said one of said vaporizers and to said output port when said selector valve is in one of said extreme positions and, a third flow path for gas received in said input port to said other of said vaporizers and to said output port when said selector valve is in the other of said extreme positions.

4,253,454

RESPIRATOR PACKAGE FOR CARRYING ON A PERSON

Ernst Warncke, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 839,578, Oct. 5, 1977, abandoned. This application May 23, 1979, Ser. No. 41,791
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644806
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—202.26 **3 Claims**



1. A combination backing frame and high pressure tank forming a shoulder mounting for carrying on the back of a person to receive breathing gas, comprising a tubular frame structure forming a backing frame adapted to contain a high pressure breathing gas for the person and to produce a cooling effect when the breathing gas is released from the frame, said backing frame having one side conformable to the person's back and adapted to overlie the person's back and having an opposite rear side, a casing connected to said frame and covering said rear side, the space between said casing and said backing frame forming a receiving chamber, said tubular frame structure comprising a single coil tube formed into a rectangular grid, a heat producing breathing gas regenerator for producing breathing gas for the person and which produces heat with the production of the breathing gas connected to said high pressure tank and positioned inside and near the top of said chamber on a side of said tubular frame away from said one side thereof conformable to the person's back, said tubular frame positioned to physically separate said heat producing breathing air regenerator from the person's back and by the cooling of said frame to counteract the heating of said regenerator to prevent a heating of the person's back.

4,253,455

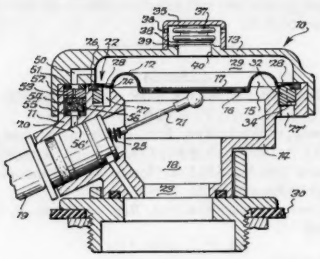
BREATHING VALVE ASSEMBLY WITH DIAPHRAGM CONTROL OF THE EXHAUST PORTS

Loyal G. Netteland, Holland, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed Aug. 7, 1978, Ser. No. 931,537
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.26 **13 Claims**

1. In a breathing apparatus having a hollow casing with an opening in one wall thereof, a flexible diaphragm secured at its periphery relative to said casing and having internal and external surfaces positioned across said opening, said diaphragm forming a chamber in conjunction with said casing and being movable in response to variations in differential pressure across said diaphragm, a breathing fluid inlet to said chamber, means

for opening said inlet responsive to movement of said diaphragm inwardly of said chamber upon a reduction of pressure within said chamber, a fluid outlet from said chamber and means for opening said outlet when pressure within said chamber exceeds a predetermined relative pressure, the improvement wherein said means for opening comprises arranging said diaphragm and said outlet so that said diaphragm itself normally closes said outlet and maintains said outlet closed until the chamber pressure exceeds a predetermined value whereupon movement of said diaphragm outwardly of said chamber opens said outlet to vent fluid from said chamber.



4,253,456

ARTIFICIAL ENDOCRINAL GLAND

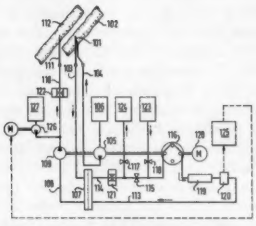
Johannes G. Schindler, Marburg; Wilfred Schäl, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutisch Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Aug. 21, 1978, Ser. No. 935,600

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737922

Int. Cl.³ A61M *5/14*

U.S. Cl. 128—214 R **11 Claims**



1. A system intended for use in a patient for simulating an endocrinal gland by transferring a component of the flowing blood from said patient being monitored and treated into a measuring fluid flow path, comprising:

(a) means for providing a constant flow of measuring fluid in a closed path, said measuring fluid not being consumed or diluted during measurement in said measuring fluid flow path;

(b) dialyzing means coupled to said flowing blood and having a semipermeable membrane, said membrane permitting a component of said blood being monitored to be transferred to said measuring fluid in said measuring fluid flow path;

(c) reactor means serially disposed in said measuring fluid flow path, said reactor means containing a compound in immobilized form for catalytic conversion of said component of said blood to be transferred to said measuring fluid flow path;

(d) analyzer means serially coupled in said measuring fluid flow path for quantatatively determining the amount of said component of blood, said analyzer conversion products produced and appearing in said measuring fluid being compatable with the metabolism of said patient;

(e) means coupled into said blood being monitored for supplying a material into said blood to modify the amount of said component appearing in said blood; and

(f) controller means responsive to said analyzer means for controlling the quantity of said material supplied by said supplying means.

4,253,457

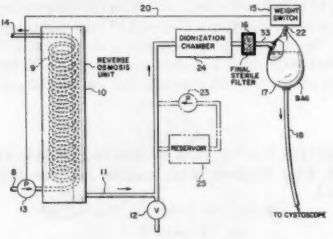
UROLOGICAL ENDOSCOPIC IRRIGATION SYSTEM

Harold P. McDonald, 3544 Paces Ferry Rd., NW., Atlanta, Ga. 30327

Filed Aug. 3, 1979, Ser. No. 63,652

Int. Cl.³ A61M *7/00*

U.S. Cl. 128—227 **7 Claims**



1. An irrigation apparatus for dispensing fluid comprising:

a reverse osmosis unit for connection to a conventional water supply for producing a substantially pyrogen-free fluid;

final filter means coupled to the output of the reverse osmosis unit for filtering the fluid supply collected by the osmosis unit;

reservoir container means coupled to the output of said filter means for holding a measured quantity of the fluid; and

weight sensitive switch means supporting said reservoir container means whereby actuation of said switch means transfers quantities of fluid from said reverse osmosis unit to said reservoir container means

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4,253,458

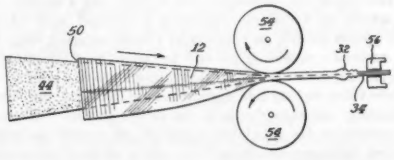
METHOD AND APPARATUS FOR COLLECTING BLOOD PLASMA

David V. Bacehowski, Wildwood, and Terrance J. Hebron, Antioch, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 8, 1979, Ser. No. 18,499

Int. Cl.³ A61J *1/00*

U.S. Cl. 128—272 **14 Claims**



4. In the method of collecting blood in an interconnected, sealed, multiple blood bag system which comprises collecting donor blood into a donor bag, centrifuging said donor bag, and expressing separated blood plasma through a sealed conduit

into a sealed, interconnected transfer bag, the improvement comprising, in combination: expressing said plasma through said sealed conduit into a sealed, flexible, collapsible transfer bag which defines an inlet at one end for receiving the blood plasma and a shoulder portion surrounding said inlet, said transfer bag tapering from said shoulder portion to a generally flat configuration at its end opposite to one end; freezing said plasma to solidified form in said transfer bag; cutting said shoulder portion away from the transfer bag after the plasma has frozen to define an open, cut end; and removing the frozen plasma from said transfer bag in frozen form.

4,253,459

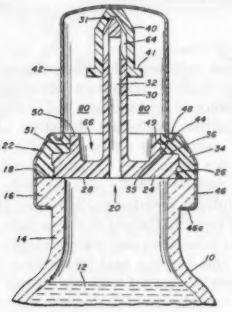
ADDITIVE TRANSFER UNIT WITH STABILIZED SEALING MEANS

Wilburn C. Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 898,157, Apr. 20, 1978, Pat. No. 4,200,100. This application Nov. 19, 1979, Ser. No. 92,064

Int. Cl.³ A61J *1/00*

U.S. Cl. 128—272.3 **8 Claims**



1. An additive transfer unit for transferring a liquid medicament into a container comprising:

a liquid storage container for holding the medicament to be transferred, said container having a neck portion terminating at a bead, said bead having a rim, with the inside dimension of the rim defining the circumference of a mouth of the container;

a disc of rigid material closing the mouth of the container, with a lower portion of said disc overlying at least a portion of the rim of the container;

a rigid piercing member extending from a central location of the disc in a direction axially outwardly of the mouth of the container, terminating in a needle point, said disc and said piercing member comprising an integral, one-piece structure;

an aperture extending from the needle point through a longitudinal axis of the piercing member and continuing through the disc along such axis to define a passageway from the interior of the container to the exterior of the container;

a protective tip providing a seal over the needle point of the piercing member;

elastic sealing means around and contiguous the outside diameter of the disc overlying at least a portion of the rim of the container, and overlying an outer peripheral portion of the disc, said sealing means and said disc providing, in combination, a fluid-tight seal over the mouth of the container;

and wherein said disc further comprises a hub extending axially outwardly of the upper portion of the disc, said hub being spaced radially outwardly of the piercing member and including a radially outwardly facing outer surface portion abutting against an inner peripheral portion of the elastic sealing means.

4,253,460

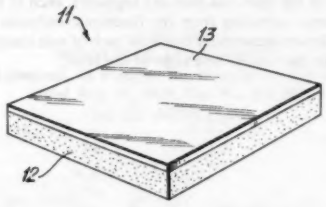
OSTOMY ADHESIVE

James L. Chen, East Brunswick; Rudolfo D. Cilento, North Brunswick; John A. Hill, New Brunswick, and Anthony L. La Via, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 804,673, Jun. 8, 1977, Pat. No. 4,192,785. This application Jul. 27, 1979, Ser. No. 61,772

Int. Cl.³ A61F *5/44*

U.S. Cl. 128—283 **12 Claims**



1. A skin barrier comprising an adhesive layer having a thin continous or discontinuous polymeric film laminated to one surface of the adhesive, said adhesive consisting essentially of a substantially homogenous mixture on a percent weight basis of from about 15% to about 40% of guar gum, locust bean gum, or mixtures thereof; from 0% to about 25% of pectin, gum karaya, or mixtures thereof provided that the total amount of guar gum, locust bean gum, gum karaya and pectin is from about 20% to about 55%; from about 40% to about 60% of a mixture of a low molecular weight polyisobutylene having a viscosity average molecular weight of from about 36,000 to about 58,000 on the Flory scale and butyl rubber having a viscosity average molecular weight of from about 300,000 to about 450,000 on the Flory scale, said polyisobutylene and said butyl rubber combined in a ratio of from about 3 to 1 to about 5 to 1 on a weight basis; and as a cohesive strengthening agent from about 2% to about 12% of an inert natural or synthetic fibrous material or from about 10% to about 30% of a finely divided cellulose, a finely divided substantially water insoluble cross-linked dextran, a finely divided substantially water insoluble cross-linked sodium carboxymethyl-cellulose, or a finely divided substantially water insoluble starch-acrylonitrile graft polymer.

4,253,461

ABSORBENT BRIEF

Danny L. Strickland, and Ronald B. Visscher, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 829,035, Aug. 30, 1977, abandoned. This application Oct. 11, 1979, Ser. No. 83,747

Int. Cl.³ A61F *13/16*

U.S. Cl. 128—287 **1 Claim**

1. In an absorbent brief having a moisture-impervious backsheet, a moisture pervious topsheet and a moisture-absorbent member interposed between said backsheet and said topsheet, the backsheet and topsheet having substantially identical rectangular configurations with oppositely disposed leg cut-out areas in the central portion of each side edge, the leg cut-out areas defining a crotch portion interposed and integrally joined with trunk-encircling portions at opposite ends of the brief, an elastic member joined to each side of the crotch portion, said elastic member being in contractable condition when joined thereby causing the crotch portion of the brief to have a tendency to gather, each of said elastic members extending through the crotch portion in a straight line and terminating in

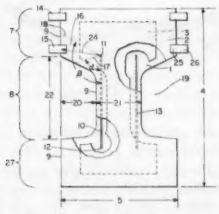
functional endpoints in the end area of the trunk-encircling portions nearest the crotch portion, upper securement means including a tape attached to and extending from each side edge of one of the trunk-encircling portions near the end edge thereof, the improvement comprising:

(a) lower securement means including a tape attached to and extending from each side edge of said one of said trunk-encircling portions,

(b) each of said lower securement means being spaced inwardly toward the crotch portion with respect to said upper securement means,

(c) each of said lower securement means being attached to an anchoring region,

(d) each of said anchoring regions being defined by a side edge of the brief and two line segments, each of said line segments extending from the functional endpoint nearest each lower securement means of each of said elastic members to the nearest side edge of the brief,



(e) the first of said line segments extending outwardly from the functional endpoint at an angle of at least about 90° as measured from the elastic member terminating at said functional endpoint,

(f) the second of said line segments extending outwardly from the functional endpoint at an angle no greater than about 140° as measured from the elastic member terminating at said functional endpoint,

(g)a securement vector lying within each of said anchoring regions and extending from said functional endpoints to the lower securement means,

(h) whereby the lower securement means when attached to the opposite trunk-encircling portion when said brief is in use functions to form an effective thigh seal snugly around each leg of a wearer in a plane substantially perpendicular to the thigh-bone of the wearer.

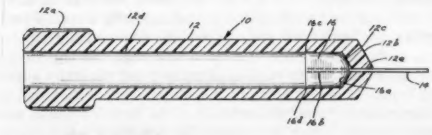
(i) the line of each of said thigh seals being through its respective elastic member, securement vector and lower securement means.

4,253,462

STYLET

Robert G. Dutcher, Columbia Heights; Edward G. O'Neill, St. Paul, and Richard D. Sandstrom, Scandia, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 9, 1979, Ser. No. 64,947
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **4 Claims**



1. A stylet comprising:

a knob having a proximal end and a distal end and having a longitudinal hole from said proximal end to said distal end wherein said longitudinal hole has a first diameter at said proximal end and a second diameter at said distal end;

a stylet wire having a proximal end and a distal end and having said proximal end of said stylet wire inserted into said distal end of said longitudinal hole of said knob; and

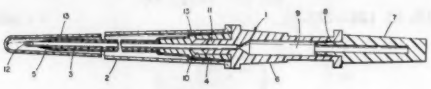
a stylet retaining sleeve larger than said second diameter frictionally engaged within said longitudinal hole and frictionally attached to said proximal end of said stylet wire.

4,253,463

METHOD OF REDUCING INFECTION UTILIZING AN INTRAVASCULAR DEVICE HAVING ANTISEPTIC METAL PORTION

Il B. Kim, 300 Briar La., Morris, Ill. 60450

Continuation of Ser. No. 841,659, Oct. 13, 1977, abandoned. This application Oct. 19, 1979, Ser. No. 86,556
Int. Cl.³ A61M *25/00*
U.S. Cl. 128—348 **4 Claims**



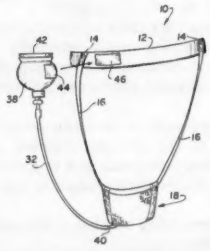
1. A method of reducing infection utilizing an intravenous device during a medical procedure performed on a patient wherein a substance is injected into the body of a patient or withdrawn therefrom, including the steps of connecting a flexible tubular member to a first end of a tubular member having an exterior surface of common metal, inserting said flexible tubular member wholly into the body of said patient and said metal tubular member partially into the body of said patient past said first end thereof so the portion of said intravenous device in contact with said patient's body at the insertion point is metal, and keeping said intravenous device in such position with metal in contact with said patient's body at insertion point until completion of said medical procedure.

4,253,464

METHOD AND DEVICE FOR CONTRIBUTING TO THE OBVIATING OF MALE INFERTILITY

Adrian W. Zorgniotti, New York, and Andrew I. Sealfon, Middletown, both of N.Y., assignors to Repro Med Systems, Inc., Middletown, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,147
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—400 **4 Claims**



1. A method contributing to minimizing male infertility due to abnormally elevated testicular temperature comprising the steps of supporting on a lower torso garment an absorbent member presenting a cooling surface in position adjacent to and in surrounding relation about the periphery of the testis, additionally supporting on said lower torso garment a source of evaporative fluid, and continuously flowing from said evaporative fluid source to said absorbent member through a capillary means selected to provide at least seven grams per hour of said evaporative fluid for evaporative release from said cooling

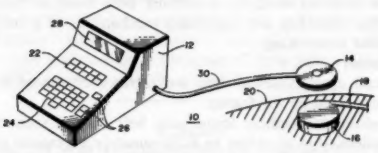
surface, whereby the calories in an amount corresponding to the latent heat of vaporization of said evaporative fluid are removed from the testis to diminish said otherwise abnormal elevated temperature thereof.

4,253,465
Patent Not Issued For This Number

4,253,466
TEMPORARY AND PERMANENT PROGRAMMABLE DIGITAL CARDIAC PACEMAKER

Jerome T. Hartlaub, New Brighton; Ray S. McDonald, St. Paul, and Lawrence W. Shearon, Roseville, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 958,328, Nov. 6, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,606
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **37 Claims**



1. A programmable medical device pulse generator capable of being programmed in either a temporary or a permanent mode in response to a programming signal provided thereto from external means, said programming signal including a first portion of data manifesting that said pulse generator is to be programmed in a certain manner and a second portion of data indicating said certain manner is to be either permanent or temporary, said pulse generator comprising:

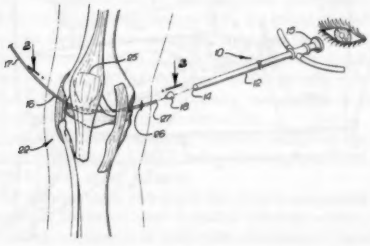
detector means for detecting both said first and second portions of data contained in said programming signal; and

means responding to said detector means for permanently programming said pulse generator in said certain manner whenever said second portion of data in said programming signal indicates said certain manner is to be permanent and for temporarily programming said pulse generator in said certain manner whenever said second portion of data in said programming signal indicates said certain manner is to be temporary.

4,253,467
ARTHROSCOPIC PROBE

Calvin H. Frazier, 1808 Verdugo Blvd., Glendale, Calif. 91208

Filed Nov. 2, 1979, Ser. No. 90,675
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—630 **12 Claims**



1. An apparatus for use in a surgical insertion of an arthroscope of the type having a blunt viewing end into a predetermined location within a human knee, said apparatus comprising:

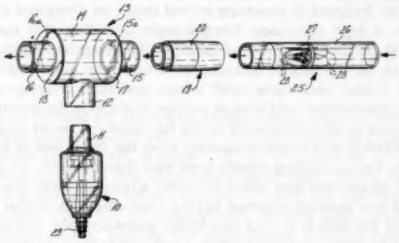
a rigid probe having a leading end, said probe adapted to be inserted from an anterior portal of said knee through the center of said knee;

means for temporarily connecting said probe to said arthroscope comprising a sleeve configured at a first end to engage said leading end of said probe and configured at a second end to receive said arthroscope, each of said ends having cylindrical portions of a fixed diameter, the cylindrical portion of the second end having a greater diameter than that of the first end, said sleeve ends being joined by a central portion having a wall that tapers to a smaller diameter in a direction toward the first end.

4,253,468
NEBULIZER ATTACHMENT

Steven Lehmbeck, 48 Prospect St., Hawthorne, N.J. 07506

Filed Aug. 14, 1978, Ser. No. 933,202
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—726 **3 Claims**



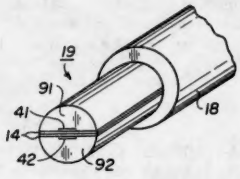
1. In combination with a nebulizer for converting liquid medication into aerosol, the nebulizer having an outlet for the aerosol, the nebulizer when used by a patient being adapted to be oriented substantially vertically with the outlet at the top, the improvement comprising a reservoir, the reservoir including a chamber having an inlet for communication with the ambient for supplying air for inhalation by the patient together with the aerosol, an outlet in substantial axial alignment with the inlet for communication with the patient's mouth, an inlet formed in the chamber floor intermediate the inhalation inlet and outlet and substantially perpendicular thereto, the intermediate inlet being connected to the nebulizer outlet and thereby being in communication with the nebulizer, end walls through which said inhalation inlet and outlet are formed, the intermediate inlet being above the nebulizer outlet when the nebulizer is being used by a patient and the end walls extending upwardly from the entire chamber floor to heights substantially above the chamber floor, the chamber floor between the end walls defining an unobstructed path for draining of liquid medication from said chamber floor into said intermediate inlet, whereby the reservoir is adapted for trapping liquid medication which separates from the aerosol, preventing the liquid medication from entering said inhalation inlet and outlet and permitting the liquid medication to drain back into the nebulizer through said intermediate inlet, a first conduit communicating with the inhalation inlet and a spirometer rotor mounted in the conduit for rotation by air drawn through the conduit by inhalation by the patient, a second conduit communicating at one end with the first conduit and communicating at the other end with the inhalation inlet, whereby the first conduit communicates with the inhalation inlet through the second conduit, and a one-way valve mounted in the second conduit, the one-way valve being arranged to permit the passage of air only in the direction from the ambient toward the inhalation inlet, whereby contamination of the spirometer rotor by the medication is prevented.

4,253,469

IMPLANTABLE TEMPERATURE PROBE

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Division of Ser. No. 802,115, Mar. 31, 1977, Pat. No. 4,182,313.
This application Apr. 20, 1979, Ser. No. 31,841
Int. Cl.[3] A61B 0/00
U.S. Cl. 128—736 6 Claims



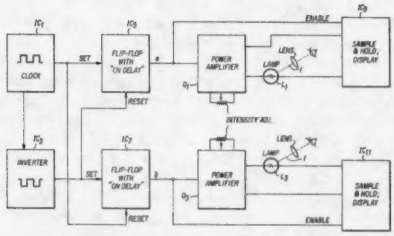
1. An implantable bi-metallic temperature sensing unit comprising: a rigid needle having a hollow substantially conical portion designed to penetrate animal tissue; an elongated substrate; a high resistance thermocouple including two overlapped metallic films bonded substantially along the longitudinal axis on one face of said elongated substrate, said substrate being folded back upon itself where said films overlap and being inserted into said conical portion to position the overlapping area in close proximity to the tip thereof; a meter means and flexible lead means extending from the distal end of said needle for connecting signals from said thermocouple to said meter means, said lead means including a resistive static charge shield and resistive material having characteristics similar to that of the metals in said bi-metallic thermocouple, and said needle including materials having resistance to limit the energy coupled from incident radio frequency fields.

4,253,470

MARCUS-GUNN QUANTITATOR

Larry A. Sheingorn, 3139 Tennyson St., N.W., Washington, D.C. 20015

Filed Jan. 15, 1979, Ser. No. 3,512
Int. Cl.[3] A61B 3/00
U.S. Cl. 128—745 4 Claims



1. A device for quantitating afferent optic nerve defects comprising:

(a) two lamps, each lamp being positioned such that each beam from each lamp is capable of being directed at a different eye of a human patient;

(b) means for alternately illuminating said lamps;

(c) means for independently varying the intensity of illumination of said lamps; and

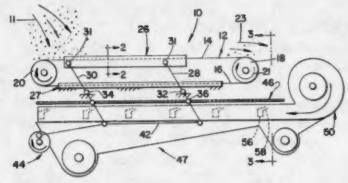
(d) means for independently quantitating the intensity of each lamp, comprising circuitry which samples, stores and displays a variable proportional to the illumination emitted by each lamp.

4,253,471

CLEANING SHOE FOR A COMBINE HARVESTER

Josef W. Klimmer, Zweibrücken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Jul. 5, 1979, Ser. No. 54,735
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1978, 2830163
Int. Cl.[3] A01D 41/12
U.S. Cl. 130—22 R 12 Claims



1. A cleaning shoe for processing crop material received from the threshing and separating mechanisms of a combine harvester comprising:

a frame;

spaced apart upstream and downstream conveyor rollers supported by the frame;

an elongated endless foraminous belt trained around the rollers so as to define an approximately horizontal upper run and a lower run beneath the upper run, the upper run being disposed so as to receive crop material from the threshing and separating mechanism of the combine;

drive means for rotating at least one of the rollers so that the upper run of the belt moves in a downstream direction;

oscillating means supported by the frame for engaging and agitating a portion of the upper run as the upper run is moving in a downstream direction, including a pair of elongated guides extending between the rollers and engaging the opposite sides of the belt and having ends spaced from the rollers so as to permit a longitudinal component of oscillation of the guides; and

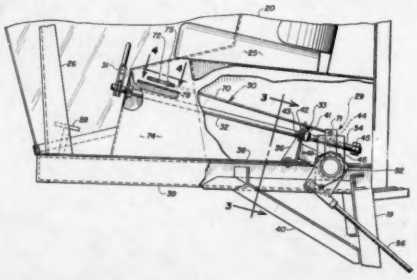
blower means supported by the frame for directing air generally upwards and downstream so that at least a portion of the air passes through the upper and lower runs of the belt.

4,253,472

CONCAVE CLEARANCE INDICATOR

James F. Rayfield, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 13, 1979, Ser. No. 93,575
Int. Cl.[3] A01F 12/28
U.S. Cl. 130—27 S 3 Claims



3. In a harvesting and threshing machine having:

(a) a mobile frame to move across a field of crop material;

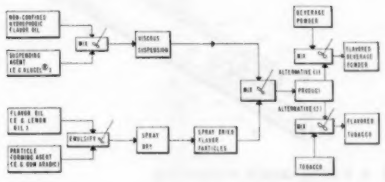
(b) a cab mounted to the frame and in which the operator controls the machine;
(c) at least one axial flow threshing and separating means rotatably mounted to the frame;
(d) drive means mounted to the frame to drive the threshing and separating means and the machine;
(e) infeed means mounted to the frame to receive crop material from the field and direct it to the threshing and separating means;
(f) concave means surrounding at least a portion of the threshing and separating means adjustably mounted to the frame and movable between a first position closest to the threshing and separating means and a second position furtherest therefrom; and
(g) a concave control apparatus including a first link connected to move a pair of mounting arms, said arms connected to move a mounting bracket having a second link first end connected thereto, said second link having a second end movably extending into a slot, said slot having calibrations adjacent thereto, said mounting arms connected for movement with a sleeve and said mounting arms connected for movement with a rod and with a concave adjustment member, said sleeve and rod each respectively connected to a pair of shear plates, said plates being interconnected by a shear bolt.

4,253,473

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF SMOKING TOBACCO OR A SMOKING TOBACCO ARTICLE BY ADDING THERETO A SUSPENDED FLAVORING COMPOSITION

Don Marmo, Farmingdale, and Frank L. Rocco, Richmond Hill, both of N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 17,530, Mar. 5, 1979, abandoned. This application Jul. 13, 1979, Ser. No. 57,270
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—2 **4 Claims**



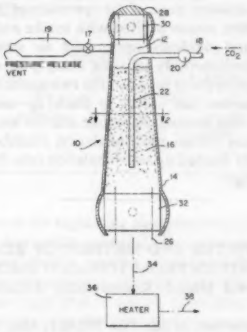
1. A smoking tobacco or substitute smoking tobacco comprising a composition consisting essentially of:
a. From about 3 up to about 7 parts by weight of a non-confined hydrophobic flavor oil;
b. From about 3 up to about 7 parts by weight of a hydrolytically releaseable flavor oil physically entrapped in an edible solid material selected from the group consisting of gelatin, dextrin, gum acacia and modified food starch, said solid material having a particle size of from about 5 microns up to about 400 microns, said physically entrapped flavor oil being organoleptically compatible with said non-confined hydrophobic flavor oil;
c. From about 0.1 up to about 1 part by weight of hydroxypropyl cellulose, having a molecular weight of from about 50,000 up to about 800,000,
whereby the physically entrapped flavor oil is suspended in the non-confined flavor oil, and shredded tobacco within which the resulting suspension is uniformly distributed whereby as the tobacco is smoked during the smoking activity, the flavor is released at a high flavor intensity substantially evenly and iniformly over an extended smoking activity time.

4,253,474

METHOD FOR EXPANDING TOBACCO

Charles H. Hibbitts; Byron F. Price, both of Chester; Everett C. Cogbill; James G. Kelly, both of Richmond, and James E. Glass, Sutherland, all of Va., assignors to American Brands, Inc., New York, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,316
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—140 P **13 Claims**



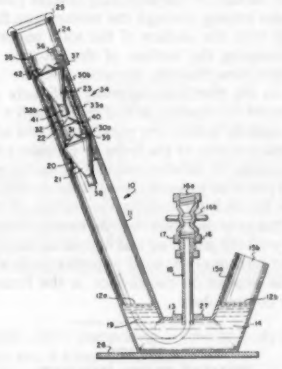
1. A method for expanding tobacco tissue which comprises impregnating tobacco tissue in a confined vessel wherein the internal temperature is about −8° F. to about 56° F. with carbon dioxide by contacting the tobacco tissue with a mist of carbon dioxide including a mixture of liquid and gaseous constituents, removing the impregnated tobacco tissue from the confined vessel, heating the impregnated tobacco tissue to effect rapid release of the carbon dioxide, and recovering expanded tobacco tissue.

4,253,475

WATER PIPES OR BONGS

Ronald J. Schreiber, and Batya R. G. Schreiber, both of P. O. Box 7803, Ann Arbor, Mich. 48107

Filed Oct. 12, 1977, Ser. No. 841,350
Int. Cl.³ A24F *1/30*
U.S. Cl. 131—173 **9 Claims**



1. A water pipe or bong comprising an inhalation chamber means, an air intake chamber means; and a free flow fluid communication chamber means having fluid therein intermediate said inhalation and air intake chamber means; the fluid within said fluid chamber means having a first surface within said air intake chamber means and a second surface area,

within said inhalation chamber means; a bowl for burning a substance to be smoked; tubular means for directing smoke from said bowl to the water in said combustion chamber means, said tubular means having an effective cross sectional area considerably smaller then the cross sectional area of said air intake chamber means; whereby during the first stage by operation of the bong, said air intake chamber means is closed to allow smoke to be drawn from said bowl through said tubular means and said fluid communication chamber means into said inhalation chamber means; whereby during the second and consummatory stage of the operation of the bong, said inhalation chamber means is filled with smoke and the smoker draws harder and suddenly opens said air intake chamber means while simultaneously inhaling sharply thereby causing an air pressure differential between the two surface areas of the water which causes said water to flush up said inhalation chamber means thus forcing the smoke into the smoker's lungs; water trap means within said inhalation chamber means to prevent the water flushed up said inhalation tube from entering the smoker's lungs.

4,253,476

TOBACCO FILTER AND METHOD OF REMOVING IMPURITIES FROM TOBACCO SMOKE

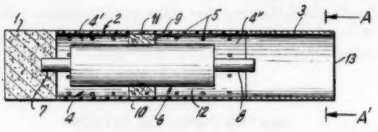
Shigeo Sato, 4-4-3 Higashi-Kanesawacho, Hitachishi, Ibarakiken, Japan

Continuation-in-part of Ser. No. 782,021, Mar. 28, 1977, abandoned, which is a continuation of Ser. No. 556,877, Mar. 10, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,233

Claims priority, application Japan, Mar. 8, 1974, 49-27376

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—261 B **37 Claims**



37. A method of extracting undesirable impurities from tobacco smoke comprising the steps of passing the tobacco smoke through an annularly shaped passageway in the axial direction thereof, arranging a solid impermeable hit-stick forming the inner surface of the annularly shaped passageway so that the smoke passing through the passageway flows axially therethrough over the surface of the solid impermeable hit-stick and arranging the surface of the hit-stick to provide optimum deposition thereon, drawing ambient air into the passageway in the direction extending obliquely of the axial direction thereof for forming jets of air through a plurality of holes in the outside wall of the passageway and adjusting the number, shape and size of the holes to provide jets of air for striking the smoke in an effective and powerful manner and directing the jets of air inwardly toward the surface of the solid impermeable hit-stick for striking the surface of the hit-stick obliquely of the axial direction thereof, hitting the smoke in the passageway with the jets of air and depositing impurities in the smoke on the surface of the solid impermable hit-stick so that the impurities deposit on the surface in the form of clearly visible black colored dots.

4,253,477

DENTAL FLOSS HOLDER

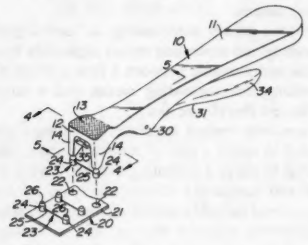
John J. Eichman, 212 Haddon Ave., Westmont, N.J. 08108

Filed Aug. 2, 1979, Ser. No. 63,079

Int. Cl.³ A61C *15/00*

U.S. Cl. 132—91 **7 Claims**

1. A holder for dental floss, said holder comprising a handle for manual gripping, a head extending generally longitudinally from said handle for entry into a user's mouth, a pair of spaced legs extending from one side of said head transversely of said handle for respective location on opposite sides of one row of the user's teeth, floss holding means on said legs for holding a length of floss in bridging relation across the space between said legs, a bit member on the other side of said head located to be bitten by a user's teeth of the other row to engage the floss



between adjacent teeth of said one row, a lever pivoted to said handle for swinging movement actuated by a user's hand, and a bearing member extending from said lever on one side of said head and swingable with said lever toward and away from said head, said bearing member being engageable with teeth of said one row and movable away from said head to disengage floss from between the teeth of said one row.

4,253,478

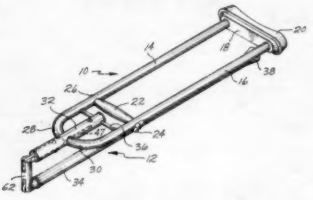
FOLDING CRUTCH

Emmett O. Husa, 12739 Phinney Ave. N., Seattle, Wash. 98133

Filed Jul. 25, 1979, Ser. No. 60,646

Int. Cl.³ A61H *3/02*

U.S. Cl. 135—68 **6 Claims**



1. A folding crutch, comprising:

an upper section including an underarm rest, a handle below said underarm rest, and a tubular upper portion of a stile below said handle;

a lower section comprising a lower portion of said stile; and

connector means connecting said upper and lower sections together in a manner permitting said sections to be moved between a use position in which the upper and lower sections are generally aligned and a folded position in which each section is adjacent the other section, said connector means comprising a first end piece connected to the upper end of the lower portion of said stile, a second end piece which is telescopically received within the tubular upper portion of the stile, a link positioned between said first and second end pieces; pivot pin means connecting the ends of said links to said end pieces in a manner permitting said end pieces, and the upper and lower sections of the crutch connected thereto, to be pivotally moved between a first position in which they are axially aligned with the link and a second position in which they are both substantially perpendicular to the link and adjacent one another, stop means for preventing telescopic movement of the second end piece completely out from the tubular upper portion of the stile, and releas-

able lock means carried by said second end piece and engageable with the tubular upper section of the stile for locking the two sections together in said use position, said lock means including a depressible lock button; and

wherein the side wall opening in the upper portion of the stile is spaced longitudinally below said handle a distance which makes it possible for a user to grasp the handle with one hand and place his thumb on said lock button, so that he can with his other hand grasp the lower portion of the stile and pull his hands apart while depressing the lock button with his thumb, to release said releasable lock means and telescopically move the link out from the tubular portion of the stile, enabling the crutch to be folded.

4,253,479

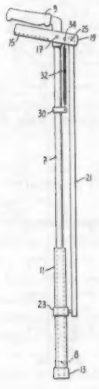
EXTENDABLE CANE

André Laurent, 23900 Santa Cruz Hwy., Los Gatos, Calif. 95030

Continuation-in-part of Ser. No. 71,011, Aug. 30, 1979. This application Oct. 4, 1979, Ser. No. 81,641

Int. Cl.³ A45B *9/00*

U.S. Cl. 135—69 **3 Claims**



1. A cane, ski pole, crutch or the like comprising in combination:

a. a shaft adapted to bear a portion of the weight of a user,

b. a first hand grip fixed to the upper end of said shaft and extending at about a right angle to said shaft,

c. a second hand grip pivoted at a point on said shaft below said first hand grip, said second hand grip being movable from a first position where it rests parallel to and in contact with said first hand grip to a second position where it is spaced from and forms an acute angle with said first hand grip,

d. said second hand grip having a lever arm extending on the opposite side of said shaft,

e. sliding member extending beyond the bottom end of said shaft, said member being mounted for sliding movement on said shaft,

f. a stiff member attaching said sliding member to the outer end of said lever,

g. whereby a user can squeeze the first and second hand grips together to extend said sliding member beyond the end of said shaft and release said hand grips to retract said sliding member.

4,253,480

PRESSURE REGULATOR FOR FLUID PRESSURES

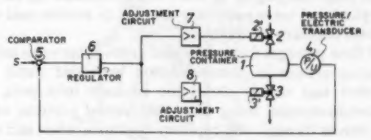
Gerd Kessel, Geiselbullach; Heinrich Kümmeke, Zorneding; Hans-Jürgen Kupfer, Oberschleissheim, and Joachim Rau, Munich, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,654

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811345

Int. Cl.³ G05D *16/20*

U.S. Cl. 137—102 **10 Claims**



1. In a device for regulating the pressure of a fluid pressure medium, an electrically operated solenoid valve connected to a container and having a valve member in a passage therein movable between positions to open and close the valve passage, pressure-responsive means for generating a signal indicative of the actual pressure in a container, a comparator connected to said actual pressure signal generating means and generating a difference signal indicative of the difference between the actual pressure and a command pressure in the container, a regulator connected to said comparator to receive said difference signal and generating a regulator signal at an output thereof, means connected to said regulator output to receive said regulator signal for generating a control signal to adjust said valve member within a range intermediate the valve closed and open positions to provide a continuously variable passage through said valve during a predetermined period of time, said control signal comprises an impulse formed voltage having a frequency greater than the maximum actuating frequency of said solenoid valve.

4,253,481

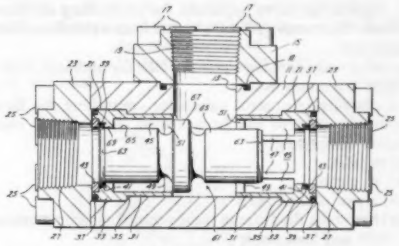
CUSHIONED SHUTTLE VALVE

Edward C. Sarlls, Jr., Alief, Tex., assignor to Gilmore Valve Company, Bellaire, Tex.

Filed May 7, 1979, Ser. No. 36,674

Int. Cl.³ F16K *31/12, 11/07*

U.S. Cl. 137—112 **5 Claims**



1. A shuttle valve comprising a tubular body having two coaxial inlets and a transverse outlet,

two tubular cages telescopically received in said body respectively in one and the other of said inlets, each cage being internally grooved leaving bearing ribs between the grooves extending in the direction of the axis of the cage, the grooves providing flow passages extending the length of the bearing ribs,

a shuttle coaxial with said cages including end portions

having cylindrical outer portions axially slidably engaging said bearing ribs,

said shuttle including a collar between said end portions having an outer cylindrial surface of larger diameter than the inner diameter of said cages at said end portions adapted to engage the inner ends of said ribs to limit axial travel of said shuttle,

each cage carrying at its outer end seal means adapted to engage and seal with the outer periphery of an end portion of said shuttle to close the adjacent inlet port when the shuttle is moved toward such port,

each cage carrying at its inner end an annular lip having a cylindrical inner periphery adapted to receive said collar with capillary clearance,

said flow passages formed by said grooves between said ribs being always in communication with said outlet even when said shuttle closes the adjacent inlet port, such communication being from the deepest portions of said grooves through said capillary clearance when said collar is engaged with the ends of the ribs forming such flow passages.

4,253,482

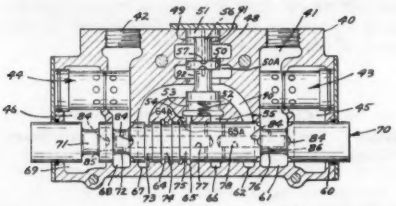
HYDRAULIC VALVE HAVING PRESSURE COMPENSATED DEMAND FLOW

William T. Stephens, New Brighton, Minn., assignor to Gresen Manufacturing Company, Spring Park, Minn.

Continuation of Ser. No. 870,765, Jan. 19, 1978, abandoned, which is a continuation of Ser. No. 793,381, May 4, 1977, abandoned, which is a continuation of Ser. No. 631,021, Nov. 12, 1975, abandoned, which is a continuation of Ser. No. 509,834, Sep. 27, 1975, abandoned, which is a continuation of Ser. No. 231,174, Mar. 2, 1972, abandoned. This application Mar. 5, 1979, Ser. No. 17,193

Int. Cl.[3] F15B *11/16*

U.S. Cl. 137—117 **20 Claims**



1. Directional valve apparatus for controlling the flow of hydraulic fluid under pressure to and from a plurality of loads, comprising:

(a) a valve body defining a primary inlet for hydraulic fluid and a primary return outlet;

(b) a plurality of control valves for controlling the flow of hydraulic fluid to and from a load, each of said control valves comprising

(i) an inlet;

(ii) an outlet;

(iii) a pair of load ports;

(iv) hydraulic fluid circuit means commonly communicating with said load ports;

(v) directional valve means variably movable between demand and nondemand positions for selectively delivering variable quantities of hydraulic fluid from the hydraulic fluid circuit means to one of the load ports, and for directing hydraulic fluid from the other port to return;

(vi) and flow control valve means comprising pressure responsive means communicating with the associated inlet, outlet and hydraulic fluid circuit means for proportioning hydraulic fluid from the inlet between the hydraulic fluid circuit means and outlet as a function of

hydraulic fluid pressure at the associated inlet;

hydraulic fluid pressure at said return outlet;

hydraulic fluid pressure at the associated load port to which hydraulic fluid is delivered;

(vii) said flow control valve means further comprising biasing means for normally urging the flow control means to a position delivering all hydraulic fluid to the hydraulic fluid circuit means;

(c) said plurality of control valves being sequentially connected inlet to outlet with the inlet of the first in sequence in communication with said primary inlet, and the outlet of the last in sequence in communication with said primary return outlet;

(d) and bypass means including inlet valve means disposed between the primary inlet and primary return outlet for shunting flow directly to return if no directional valve means is in a demand position, and for directing the flow of hydraulic fluid to the inlet of the first control valve in sequence if any directional valve means is in a demand position.

4,253,483

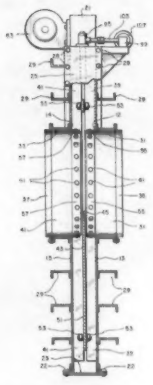
MOVABLE BLADE DAMPER

Jack M. Cornelius, Birmingham, Ala., assignor to Barron Industries, Inc., Leeds, Ala.

Filed Jul. 12, 1978, Ser. No. 923,806

Int. Cl.[3] F16K *3/02, 25/04*

U.S. Cl. 137—240 **3 Claims**



1. A flue gas damper comprising:

first and second axially aligned, spaced apart tubular duct members;

a pressure chamber surrounding the adjacent ends of the first and second duct members;

a blade member located between the first and second duct members within the pressure chamber, said blade member being substantially planar and having an aperture defining a first section and an imperforate second section;

first and second lifting members secured to opposed edges of the blade member, each lifting member having a first end secured to the blade member and a second end extending out of the pressure chamber in the plane of the blade member;

means, situated outside the pressure chamber, for positioning the first and second lifting members and thereby the blade member between a first position, in which the blade aperture is aligned with the first and second duct members, and a second position, in which the imperforate second section is aligned with the first and second duct members;

first and second substantially rigid sealing strips mounted adjacent the blade member and the first and second duct members, respectively, at a substantially fixed separation adequate to prevent binding between the blade member

and the sealing strips, said sealing strips having a hardness and a rigidity adequate to substantially prevent buildup of hardened fly ash between the blade member and the sealing strips, said blade member cooperating with the sealing strips to maintain the sealing strips adjacent the blade member when the blade member is positioned in both the first and second positions; and

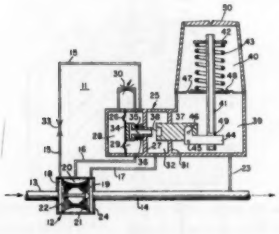
means, mounted exterior to the pressure chamber, for pressurizing the chamber with air to promote passage of air out of the chamber between the sealing strips and the blade member into the duct members, thereby substantially preventing the leakage of flue gas from the first to the second duct member when the blade member is in the second position.

4,253,484

VALVE OPERATOR

Joseph S. Danon, El Toro, and Theodore E. Kwast, Mission Viejo, both of Calif., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 61,161
Int. Cl.³ F16K *31/365*
U.S. Cl. 137—269 **5 Claims**



1. A valve operator to control the throughput flow of a pipeline valve comprising:

(a) a housing operatively connected to the valve,

(b) a pair of spaced walls in the housing defining an intermediate bleed chamber,

(c) a control chamber formed on one side of one of the walls adjacent the bleed chamber,

(d) a control loop communicating the inlet pressure to the valve with the control chamber to regulate the flow through the valve,

(e) a control diaphragm mounted in the control chamber positionable responsive to the pressure therein,

(f) an orifice device connected to and moveable responsive to the control diaphragm,

(g) the orifice device extending through the said adjacent wall to meter pressure fluid into the bleed chamber,

(h) a balancing chamber formed on one side of the control diaphragm remote from the said adjacent wall,

(i) a reset loop communicating the control chamber and the balancing chamber,

(j) a reset valve mounted in the reset loop to produce a predetermined delay in balancing the pressure gradient across the control diaphragm,

(k) a regulating chamber formed on the side of the other wall remote from the control chamber,

(l) a static pressure line communicating outlet pressure to the regulating chamber,

(m) a regulating diaphragm disposed in the regulating chamber positionable responsive to the static outlet pressure,

(n) a poppet valve connected to and moveable responsive to the regulator diaphragm, and

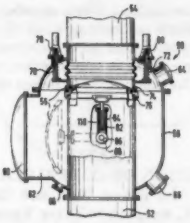
(o) the poppet valve passing through the said other wall to extend into the bleed chamber wherein it will be shifted toward or away from the orifice device independently to vary the discharge thereof.

4,253,485

VALVE FOR OPENING AND CLOSING A FLUID CONDUIT

Edouard Legille, Luxembourg, Luxembourg, assignor to Paul Wurth, S.A., Luxembourg

Filed May 26, 1978, Ser. No. 909,934
Claims priority, application Luxembourg, Jun. 6, 1977, 77487
Int. Cl.³ F16K *43/00, 31/122*
U.S. Cl. 137—315 **12 Claims**



1. A valve for opening and closing a fluid conduit having an axis and a generally wide cross-section, the conduit having a slit therein defined by facing ends of upstream and downstream conduit portions, the valve comprising:

a movable shut-off plate, said plate having a spherical shape and a peripheral sealing surface;

means supporting said shut-off plate for movement with respect to the conduit axis and through said slit, said supporting means comprising a pair of oppositely situated variable length arms, first ends of said arms being coupled to said plate, said arms being resiliently biased in the direction of elongation, said supporting means further comprising a pair of oppositely disposed pivot shafts which engage said arms adjacent the second ends thereof, said pivot shafts defining an axis; and

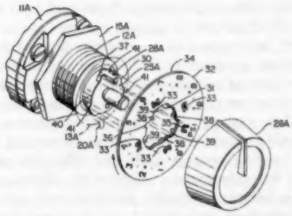
means for arcuately displacing said arms and plate about the axis of said pivot shafts to close the conduit when the plate is positioned within the conduit and open the conduit when the plate is positioned external to the conduit.

4,253,486

CONTROL DEVICE MOUNTING MEANS AND PARTS THEREFOR

George T. Hardin, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 943,666, Sep. 18, 1978, Pat. No. 4,186,762.
This application Sep. 19, 1979, Ser. No. 76,867
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ F16L *3/00;* **G12B** *9/00*
U.S. Cl. 137—343 **14 Claims**



1. In the combination of a control device having a threaded cap telescoped through a conventional key notch mounting opening in a control panel and being secured thereto by a nut threaded on said cap and disposed against one side of said panel

and fastening means carried by said cap and disposed against the other side of said panel, the improvement wherein said fastening means spans said opening of said panel and has means oriented in said key notch, said cap having orienting means, said fastening means having means oriented with said orienting means of said cap whereby said cap is oriented with said key notch, said means of said fastening means that are respectively oriented in said key notch and with said orienting means of said cap respectively being disposed substantially intermediate said one side of said control panel and said fastening means, said fastening means comprising a single member, said means oriented in said key notch comprising a tab of said member disposed in said key notch, said means oriented with said cap comprising a locating notch in said member, said cap having a tab received in said locating notch to orient said cap relative to said key notch.

4,253,487

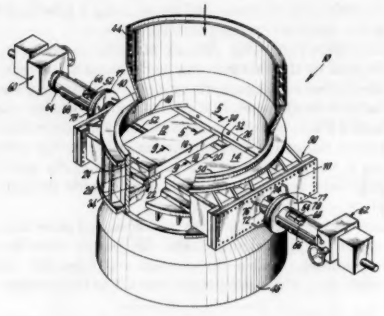
MULTI-POSITION DUAL DISC SLIDE VALVE

Arthur C. Worley, Morristown, N.J., and Charles B. Colton, Randallstown, Md., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 747,411, Dec. 21, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,049

Int. Cl.³ F16K *25/04*

U.S. Cl. 137—375 **24 Claims**



1. An improved slide valve adapted for use in the control of processes containing fluid flow with erosive materials and at high temperatures comprising in combination:

(a) a valve body comprising a wall defining a central flow passage along a main axis connected by an inlet and outlet for flow in only a single direction from said inlet to said outlet and including opposed openings in said wall transverse of said main axis;

(b) an orifice plate removably mounted in said valve body between said inlet and outlet and including an orifice opening of fixed dimensions and substantially perpendicular with respect to said main axis, said orifice plate having an inlet side which always faces said inlet and an outlet side which always faces said outlet;

(c) a pair of opposed disc members, each of predetermined thickness, mounted in said valve body in substantially the same plane as said opposed openings for sliding movement in a direction perpendicular to said main axis of said central flow passage, said disc members located only on said inlet side of said orifice plate and arranged in direct surface bearing contact with said inlet side of said orifice plate for substantially eliminating clearances and fluid bypass between said disc members and said orifice plate, said members constructed and arranged for providing a variable flow area between opposed inner edges with respect to said passage and each member having first and second opposed surfaces spaced apart a distance corresponding to said thickness disposed substantially perpendicular with respect to said main axis, and each said member also having opposed transverse sides which are coextensive with said thickness between said first and second surfaces and are each disposed in a single plane at least for said thickness;

(d) guide means secured with said valve body only on said inlet side of said orifice plate for constraining movement of said discs to a predetermined path substantially in the plane of said opposed openings in said valve body and preventing substantial transverse movement of said discs, and defining together with a portion of said inlet side of said orifice plate the path of movement of said discs; and

(e) operator means connected for selectively moving each of said discs.

4,253,488

RETAINER FOR THREADED COUPLING ELEMENTS

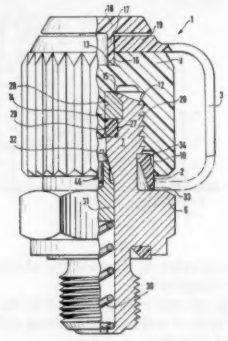
Siegfried Leverberg, Oberhausen, Fed. Rep. of Germany, assignor to Hydrotechnik GmbH, Muhlheim, Fed. Rep. of Germany

Filed Feb. 14, 1978, Ser. No. 877,721

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756084

Int. Cl.³ F16K *27/08*

U.S. Cl. 137—382 **13 Claims**



1. A retainer assembly for an internally threaded valve coupling element adapted to be screwed onto a fluid coupling bush having external threads extending over a portion of the length of the bush, comprising:

an elastically deformable annular ring secured around an area of the bush adjacent the base of the external bush threads, said internally threaded element normally overlapping said bush area when it is screwed completely onto the bush;

said ring being dimensioned to have an outer diameter larger by a predetermined amount than the internal diameter of a recess in said internally threaded element in the area thereof normally overlapping said bush area and adapted to hold said ring against said bush when the internally threaded element is completely screwed onto the bush, said predetermined amount enabling the ring material to be engaged by and deformed to an extent not exceeding its elastic limit by the internally threaded element when it is screwed completely onto the bush;

said external threads of the fluid coupling bush and said internal threads of the valve coupling assembly displaying load carrying sides having flank angles (β) larger than angles in the range of 27.5°–30°;

said bush including an axial bore and means normally biasing a check valve closed in the bore said check valve having a slotted flow channel portion;

a cover cap for the bush, said internally threaded element comprising said cover cap, the cap having an axially cylindrical nipple extending inwardly of the cap, said bush bore

including an annular groove, an elastomeric sealing ring in the groove, the sealing ring having an internal diameter smaller than the bore and smaller than the external diameter of the nipple by a predetermined amount, said predetermined amount enabling the cap nipple to elastically deform the sealing ring when the cap is screwed over the bush and to be thereby retained against rotation at least in part by said ring.

4,253,489

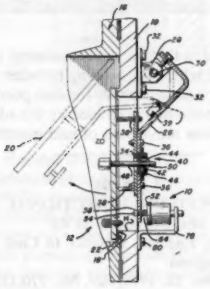
MAGNETIC LATCH FOR PRESSURE RELIEF VALVE

Daniel P. Schleiter, Sr., Mount Prospect, Ill., assignor to Vapor Corporation, Chicago, Ill.

Continuation of Ser. No. 825,275, Aug. 17, 1977, abandoned. This application Nov. 8, 1979, Ser. No. 92,527

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—527 **9 Claims**



1. A magnetic latch for latching a pressure or vacuum relief valve for a fluid tank in the closed position, said valve defined by a cover hingedly coupled to a body for relative movement thereto and a valve seat defined on said body and aligned with an opening in said body through which said pressure or vacuum may be relieved, said latch comprising a housing including at least one open unobstructed end, means for securing said housing to one of said body and said cover, a striker plate secured to the other of said body and said cover at a position to engage said open end of said housing upon said striker plate with the cover engaging said valve seat in the valve closed position, a magnet mounted in said housing including a first end adjacent said open end and spaced by an unobstructed gap from said striker plate in the valve closed position, and means for varying the size of said gap thereby adjusting the force required to open said valve.

4,253,490

VORTEX ELIMINATOR

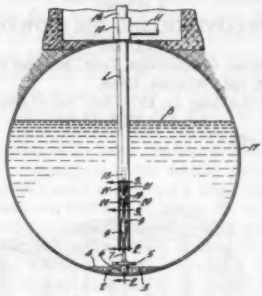
William B. Hansel, Media, Pa., assignor to Sun Petroleum Products Company, Philadelphia, Pa.

Filed Mar. 26, 1979, Ser. No. 23,798

Int. Cl.³ E21F *17/16*

U.S. Cl. 137—590 **6 Claims**

1. A liquid storage system wherein a vortex which normally forms on withdrawal of liquid is eliminated which comprises in combination, a subterranean liquid storage tank, a pump suction pipe mounted therein extending substantially vertically from the top of the tank toward the bottom thereof, a disc member positioned below and in vertical alignment with the lower end of said pipe, said disc member being of a size larger in its top surface area than the cross-sectional area of said pipe and having a top impervious to flow of liquid through it, said disc member having a pedestal which rests at the bottom of the storage tank, said disc being flexible and compressable to a size enabling insertion into and withdrawal from the tank by way of the pipe and said pedestal being of a dimension fitting through said pipe or, if of a dimension which would not normally fit through said pipe being of a flexible and compressable material



so as to enable insertion and withdrawal from the tank by way of said pipe together with said disc member.

4,253,491

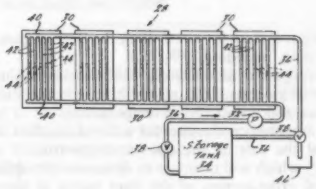
FLUID FLOW REGULATING VALVE AND SYSTEM

Roger P. Worthen, Farmington Hills, and Michael M. Walsh, Northville, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 908,026, May 22, 1978. This application Feb. 25, 1980, Ser. No. 125,817

Int. Cl.³ F16K *15/14;* **F24J** *3/02*

U.S. Cl. 137—599 **8 Claims**



1. A fluid distribution system comprising:

a plurality of mutually interconnected fluid conducting branches; and

at least one fluid flow regulating valve disposed within each said branch whereby the rate of fluid flow through each said branch remains substantially constant, each said valve comprising;

A. a body portion including a fluid passageway therethrough terminating in a contoured land, said land substantially disposed on a plane at an angle of less than 45 degrees from the direction of fluid flow and comprising a low pressure region, a high pressure region and an intermediate reed supporting region; and

B. compliant reed means overlaying said land and coacting therewith to maintain a substantially constant fluid flow rate through said valve, said reed means operative to progressively conform to the contours of said land with increasing pressure drop thereacross, said reed means and low pressures region defining a first, distinct flow path therebetween, and said reed means and high pressure region defining a second, distinct flow path therebetween, spaced from said first flow path by the extent of said reed supporting region, a portion of said reed means conforming with said low pressure region to effect substantial closure of said first flow path at a first, relatively low predetermined pressure drop level and another portion of said reed means conforming with said high pressure region to effect at least partial closure

of said second flow path at a second, relatively high predetermined pressure drop level.

4,253,492

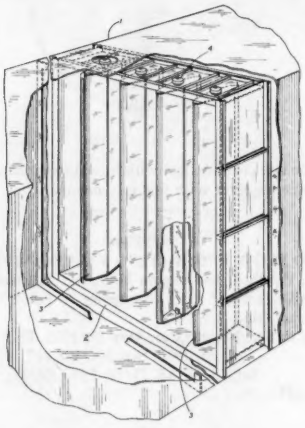
SYSTEM FOR CONTROLLING THE FLOW OF GASEOUS FLUIDS

Robert P. Sullivan, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 21, 1979, Ser. No. 41,040

Int. Cl.³ F23L *13/08*

U.S. Cl. 137—601 **4 Claims**



2. A damper system for controlling the flow of gaseous fluid through a duct, including,

a duct comprised of relatively thin sheet metal under the stress of gaseous fluid passed through the duct under pressure and with varying temperature,

a frame mounted on the internal walls of the duct in a plane normal the axis of the duct and constructed with the rigidity which will maintain its dimensional stability as the internal cross-section of the duct varies in shape under thermal stress and pressure cycling of the gaseous fluid passing through the duct,

a series of louver blades mounted in the frame and parallel to each other and extending shafts at their ends through apertures in the frame and the ends of the shafts being journaled in bearings mounted on the frame so as to be accessible from the outside of the duct,

bearings mounted on the frame so as to be accessible from the outside of the duct and in alignment with apertures through the duct and frame to receive the shafts at the ends of the louver-blades so the louver-blades may be rotated from a first position at which they seal the frame opening in which they are mounted to a second position at which they permit ready passage of the gaseous fluid through the frame opening, and

means for rotating the louver-blades together between their two positions.

4,253,493

ACTUATORS

Francis G. S. English, Grinstead, King James's La., Henfield, Sussex, England

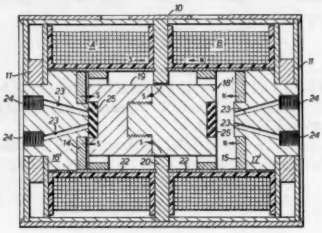
Filed Jun. 16, 1978, Ser. No. 916,098

Claims priority, application United Kingdom, Jun. 18, 1977, 25563/77

Int. Cl.³ F16K *31/08*; H01F *7/16*

U.S. Cl. 137—625.18 **12 Claims**

1. A bistable actuator of generally cylindrical shape comprising a magnetic member moveably mounted, in a housing of magnetic material, for movement between two positions, in each of which such member is positively located adjacent a respective permanent axially magnetized ring magnet of samarian cobalt, pole piece means centrally located between the permanent magnets and extending from said housing to



within a slot formed in the moveably mounted member and a separate coil located within the housing between the pole piece means and each permanent magnet for energisation to at least counteract the magnetic flux produced by the adjacent permanent magnet and allow movement of said member.

4,253,494

CONSTANT SPEED UNI-DIRECTIONAL ROTARY SEQUENCE VALVE

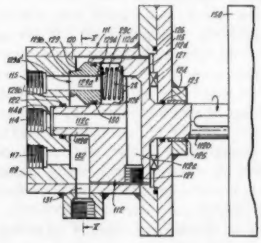
John Cooke, Bolton, England, assignor to Coal Industry (Patents) Limited, England

Filed Dec. 18, 1978, Ser. No. 970,137

Claims priority, application United Kingdom, Jan. 17, 1978, 01737/78

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—625.23 **3 Claims**



1. A constant speed, uni-directional rotary sequence valve comprising a body defining a fluid inlet port and a plurality of fluid flow outlet ports, a valve member rotatably mounted in the body and defining a flow passage having a fluid outlet and a fluid inlet, the latter in fluid flow communication with the inlet port, the valve member being rotatable within said body to connect the fluid outlet of said flow passage sequentially with each of the plurality of flow outlet ports, at least one of the fluid outlet of said flow passage and the flow outlet ports of said body being elongated in the direction of movement of the valve member to maintain a maximum fluid flow connection between the flow outlet ports of the body and the fluid outlet of the valve member during limited relative movement between the body and valve member, one of said body and valve member defining another outlet port which is in fluid connection with those flow outlet ports not in fluid flow connection with the outlet of said flow passage, said flow passage outlet and flow outlet ports being configured such that the fluid flow from said flow passage outlet to one of said flow outlet ports ceases before fluid flow from said flow passage outlet to another flow outlet port commences, and drive means for unidi-

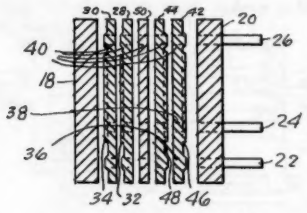
rectionally rotating the valve member at a constant rotary speed.

4,253,495

FLUIDIC ELEMENT WITH SUBSTANTIALLY ZERO NULL OFF-SET

George Mon, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 4, 1978, Ser. No. 930,968
Int. Cl.³ F15C 5/00
U.S. Cl. 137—833 **6 Claims**



1. A fluidic element which comprises:

a first thin laminate plate having supply and outlet conduits; a substantially continuous fluid passage between said supply and outlet conduits formed by fine blanking that is characterized by a die roll comprising a burr extending around said passage on one side of said plate;

a second thin laminate plate substantially indentical to said first plate; and

a thin separating plate positioned between said first and second plates for isolating from one another the respective passages of said first and second plates between said supply and outlet conduits thereby forming separate and distinct flow paths;

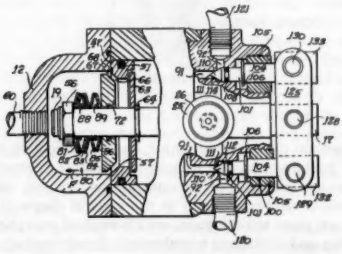
said burr of said first plate facing in one direction while said burr of said second plate faces in the opposite direction; front and rear cover plates between which said first, second and separating plates are positioned; whereby the null off-set of said fluidic element due to supply pressure and temperature variations is reduced to substantially zero.

4,253,496

HEAVY DUTY POWER VALVE

Peter Wolf, Baroda, and Kenneth L. Williams, Coloma, both of Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Continuation of Ser. No. 858,263, Dec. 7, 1977, abandoned. This application Dec. 4, 1979, Ser. No. 100,147
Int. Cl.³ F16K 1/02
U.S. Cl. 137—862 **8 Claims**



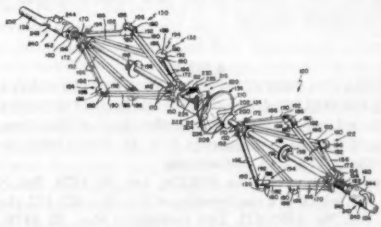
1. A brake valve comprising a housing defining an elongated bore closed at one end by a fixed end wall, a bi-ended valve rod extending through the housing end wall and having a first end outside the housing and a second end inside the housing, an apertured piston slidably disposed within the bore, the piston aperture defining a flow space permitting fluid to flow through the apertured piston, the housing further defining an exhaust port permitting fluid which has moved past the apertured piston to flow out of the valve, a reaction piston carried on the second rod end and radially extending to cover the annular piston flow space, and being adapted to move toward the annular piston so as to halt the flow of fluid through the annular piston and create a movable end wall, the movable end wall, fixed end wall and bore thus defining at least in part a collapsible chamber in the valve, the improvement comprising an interior beveled surface in the annular piston taking the form of a truncated cone and having a large diameter on the annular face adjacent the reaction piston, the beveled surface tapering smoothly to a small diameter located at a point axially upstream of the face, and a mating exterior beveled surface formed on the reaction piston, the mating face tapering smoothly from a small diameter on the reaction piston face adjacent the annular piston to a large diameter located at a point axially downstream of that face, to provide a mutual centering and seating action to the annular piston and reaction piston as the reaction piston is moved toward the annular piston, at least one fluid flow path extending from the collapsible chamber to a brake outlet port defined upon the housing, the fluid flow being angled to change the direction of fluid flow therealong, and a fluid flow stop member including a conical head member located at the fluid flow path angle and being slidable in an upstream direction to engage an annular fluid flow seat at a point upon the stop member located between the conical head member base and a conical head member tip, the fluid flow stop member being slidable in a downstream direction out of engagement with the annular seat to permit fluid flow along the fluid flow path from the chamber to a downstream brake outlet port.

4,253,497

LIVE GAS MAIN INSERTION TOOLS

Luther W. Martin, 1221 Julie Dr., Champaign, Ill. 61820, and Richard L. Smith, P.O. Box 682, St. Joseph, Ill. 61873

Filed Aug. 14, 1979, Ser. No. 66,420
Int. Cl.³ F16L 55/18
U.S. Cl. 138—97 **13 Claims**



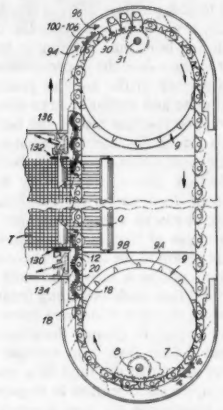
1. A coupler mechanism for use in insertion of two lengths of a flexible semirigid member from opposite ends into a length of tube, the coupler mechanism comprising a first carrier, a first coupler member supported by the first carrier, a second carrier, a second coupler member supported by the second carrier for engagement in the length of tube by the first coupler member, each of the first and second carriers including means for substantially centering a respective one of the first and second coupler members in the length of tube, means for attaching a respective one of the lengths of flexible simirigid member to a respective one of the carriers to permit pushing of the flexible semirigid members into the length of tube from the opposite ends to move the first and second carriers toward each other, and at least one of the first and second coupler members including means for locking the first and second coupler members together when they are engaged in the tube.

4,253,498

TRAVELLING WAVE SHEDDING LOOMS RELATIVE TO THE SHUTTLE LOADING SYSTEM

Vinicio Luchi, Via W. Pareto 43, Prato, Florence, Italy

Filed Mar. 20, 1979, Ser. No. 22,105
Int. Cl.[3] D03J *1/12*; D03D *47/26*
U.S. Cl. 139—224 R **8 Claims**



8. In a travelling wave shedding loom, a plurality of shuttles, and a device for winding and loading shuttle bobbins of the loom, said device comprising a movable support member associated with each shuttle and movable with the shuttle, a winding-loading mechanism and means for mounting a storage spool carried by each support member, means for withdrawing metered quantities of weft yarn from each storage spool and for forming one respective bobbin per shuttle on the respective winding-loading mechanism during delivery of successive wefts from a preceding bobbin, means for effecting transfer of the bobbin from the mechanism to the respective shuttle, and a cutting mechanism along the edges of the fabric to cut the wefts as they are deposited, said cutting mechanism being displaceable to delay its action on the wefts and obtain unwinding of the weft residues as the yarn bobbins located in the shuttles become emptied.

4,253,499

APPARATUS FOR SEVERING AND DEFORMING THE ENDS OF HELICAL BINDERS FOR PADS OR THE LIKE

Jörn-Uwe Lemburg, and Dieter Stolley, both of Hamburg, Fed. Rep. of Germany, assignors to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 898,336, Apr. 20, 1978, Pat. No. 4,153,081, which is a continuation of Ser. No. 821,177, Aug. 2, 1977, Pat. No. 4,095,623. This application Mar. 20, 1979, Ser. No. 22,162

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1977, 2703718

Int. Cl.[3] B21F *35/02*
U.S. Cl. 140—92.7 **24 Claims**

1. Apparatus for deforming at least one end convolution of a helical binder which consists of wire having a predetermined diameter and is threaded through the openings of a stack of loose leaves or the like, comprising

(a) a locating device having a first guide face and including means for holding at least one end convolution of a binder in a predetermined position;

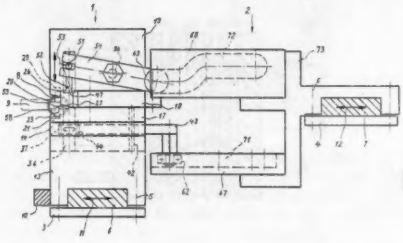
(b) a tool having means for bending the free end portion of the end convolution toward said guide face and over the neighboring convolution of the binder occupying said position;

(c) a rotary loop forming device including an eccentric portion spaced apart from said guide face by a distance approximating said diameter;

(d) means for rotating said loop forming device to thereby convert, by way of said eccentric portion and in response to rotation of said loop forming device, the bent end portion of the end convolution of the binder occupying said position into a loop which surrounds the neighboring convolution;

(e) a hold-down device having a second guide face; and

(f) means for moving said hold-down device between the end convolution and the neighboring convolution of the



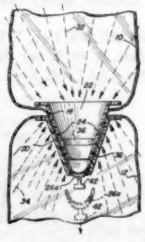
binder occupying said position, said moving means being operative to move said hold-down device with respect to said loop forming device between a first position in which said second guide face is adjacent to the neighboring convolution and is spaced apart from said first guide face by a distance which approximates said diameter and a second position in which said hold-down device is withdrawn from the binder occupying said position, said second guide face being nearer to the axis of the binder occupying said position than the bent end portion of the end convolution of such binder when said hold-down device is maintained in said first position thereof.

4,253,500

STERILE CONNECTOR ADAPTED FOR MULTIPLE JUNCTIONS

Ronald A. Williams, Mundelein, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 27, 1979, Ser. No. 61,214
Int. Cl.[3] B65B *3/04, 3/18*
U.S. Cl. 141—1 **18 Claims**



1. A method of providing sealed, sterile connection between a pair of containers having transparent, flexible, thermoplastic, sealed walls, each of which contains an opaque, relatively rigid, hollow sealing member in the general shape of a truncated cone, open at both ends, which method comprises:

bringing said containers together into facing contact; nesting said hollow sealing members together with portions of said transparent walls of said containers positioned therebetween, being positioned to block fluid flow through said hollow nested sealing members; and irradiating said nested

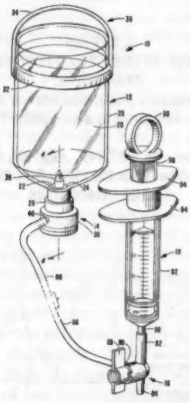
sealing members through at least one transparent container wall to heat said nested sealing members, whereby heat is conducted to said portions of the transparent walls between said nested sealing members to seal said transparent walls together; severing an annular portion of the sealed transparent walls in such a manner as to avoid exposure of said containers to the exterior; and removing from the nested sealing members the portion of the transparent walls which blocks fluid flow through said hollow, nested sealing members.

4,253,501

TRANSFER SYSTEM

Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited, So. El Monte, Calif.

Filed Nov. 9, 1979, Ser. No. 92,678
Int. Cl.³ B65B *3/02*
U.S. Cl. 141—27 **17 Claims**



9. A system for the dispensation of aliquots of a bulk solution, comprising:

a container of bulk solution; and

a transfer device comprising:

body means having:

first walls defining a tapered chamber;

second walls defining a first passage venting the smaller end of said chamber to the surrounding air;

third walls defining a second passage communicating at one end with the larger end of said chamber; and

fourth walls defining a third passage having one end for withdrawal of fluid therefrom, said third passage being free of communication with said first and second passages and said chamber within said body means;

a tapered valve element received within said chamber for movement between first and second conditions in response to changes in the pressure differential between the first and second passages, said first condition providing a fluid seal between the first and second passages by engagement of said valve element with said first walls of the chamber for pressures within the second passage greater than that within the first passage, and said second condition providing a fluid path from the first passage to the second passage for pressures within the second passage less than that within the first passage; and

means for placing the other ends of said second and third passages in communication with the interior of the container of bulk solution; and

flow valve means having first and second ports, said first port communicating with said one end of the third passage and said flow valve means operable between a first condition providing a fluid path between the first and second ports and a second condition providing a fluid seal between the first and second ports;

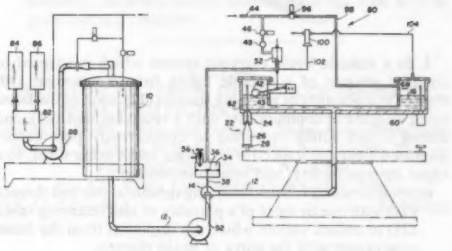
whereby withdrawal of fluid from the second port for the valve means in said first condition causes fluid to be drawn from the container through the third passage of the body means and provides a path for air to be simultaneously drawn into the container through the first and second passages of the body means, but fluid is in no event able to escape from the container through the first and second passages.

4,253,502

CARBONATED BEVERAGE BOTTLING APPARATUS

Salvatore P. Guercio, Dix Hills, N.Y., assignor to Universal Packaging Machinery Sales Corp., Dix Hills, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,027
Int. Cl.³ B65B *31/02*
U.S. Cl. 141—47 **3 Claims**



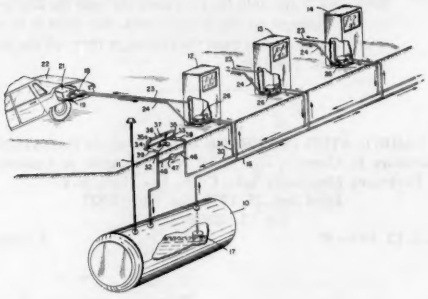
1. In the bottling of a carbonated beverage using apparatus of the type in which replenishment of the supply thereof in a closed storage container is made by the flowing of said carbonated beverage through an inlet conduit having a normally open pressure-operated valve and thereby restoring the depleted level of said carbonated beverage to a selected elevated level in said storage container at which a gaseous pressure source then causes the closing of said valve, the improvements to said apparatus enabling the bottling of said carbonated beverage at an elevated temperature, said improvements comprising discharge conduit means connected from said storage volume of said carbonated beverage in said storage container to an operative arrangement of hollow bottles incident to the filling thereof, bottle-venting conduit means operationally disposed in communication at opposite ends with the hollow interior of a cooperating bottle and the unfilled upper portion of said carbonated beverage storage container during said filling of said bottle, an operative connection to a gaseous pressure source for effectuating the prior delivery of said pressurized gas into said upper portion of said storage container for exerting a selected pressure upon said carbonated beverage filling said bottle through said bottle-venting conduit means, and pump means in said inlet conduit to said storage container downstream of said valve operatively effective to pump said carbonated beverage at approximately said same selected pressure of said gaseous pressure source through said valve in said open condition thereof during said replenishment of the supply thereof in said storage container, whereby said carbonated beverage filling a bottle is effectively under the pressure influence of said pump means at the bottle inlet and under the pressure influence of said pressurized gas at the bottle outlet and thus is maintained stable in relation to its carbon dioxide content even at said elevated temperature, and said pressures being selected to be approximately the same are effective to contribute to an optimum fast flowing rate in the carbonated beverage during the filling of said bottles.

4,253,503

MANIFOLD FUEL VAPOR WITHDRAWAL SYSTEM

Kenneth M. Gunn, Glenham, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,567
Int. Cl.³ B65B *31/04*
U.S. Cl. 141—59 **11 Claims**



1. In a volatile liquid carrying system which is adapted to conduct streams of a volatile liquid from a reservoir (**10**) thereof to a plurality of pumping stations (**12**), each of the latter being adapted to communicate with a receiving tank (**21**), and during a tank filling operation to concurrently pass vapors displaced from the respective receiving tanks being filled, to a vapor storage facility, said system including;

conduit means (**24**) detachably engageable at one end thereof (**18**) with one or more of a plurality of said receiving tanks (**21**) to collect vapors which are displaced from the latter concurrent with the entry of liquid thereto,

a common manifold (**30**) communicating the respective conduit means (**24**) with said vapor storage facility,

a vacuum assist circuit interposed in said common manifold means (**30**), and including a vapor inductor (**32**) having an inlet (**33**) communicated with manifold (**30**), and an outlet (**34**) communicated with said storge facility,

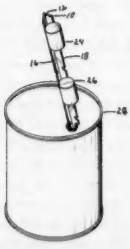
valved bypass means (**37**) communicating said vapor outlet port (**34**) with inlet port (**33**) to continuously circulate a quantity of vapor through the inductor (**32**) during a fuel transfer operation to any one or more of said receiving tanks (**21**), whereby to establish the substantially constant vacuum condition within said common manifold (**30**) regardless of the number of pumping stations which are operating.

4,253,504

DRAIN FUNNEL

Joel B. Rosen, 595 Beaver La., Ronkonkomo, N.Y. 11779

Filed Jun. 29, 1979, Ser. No. 53,338
Int. Cl.³ B67C *3/04*; B65B *3/06*
U.S. Cl. 141—106 **5 Claims**



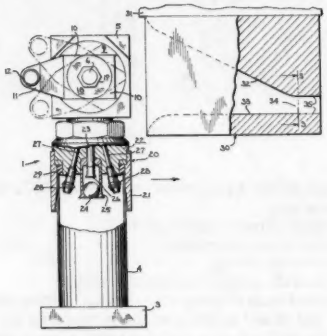
1. A drain funnel comprising an elongated unitary main body member having side edges and a top end and a lower end and having a spout integral with and at the lower end thereof, said elongated body member being arcuate from one side edge to the other side edge for permitting the contents of a fluid container mounted on said funnel to flow to said spout, and support means integral with said body member along the side edges of said main body member on line with one another at positions opposite one another and spaced apart from one another.

4,253,505

VALVE CONTROL CONSTRUCTION FOR A FILLING MACHINE

Henry Sauer, Menomonee Falls, and Steven A. Lockhart, Mequon, both of Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Continuation of Ser. No. 937,149, Aug. 28, 1978, abandoned. This application May 22, 1980, Ser. No. 152,182
Int. Cl.³ B67C *3/28*
U.S. Cl. 141—147 **4 Claims**

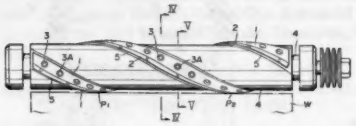


1. In a filling machine, a supporting structure, a carrier mounted for rotation with respect to the supporting structure, a valve assembly mounted on the carrier and including a valve body having a first generally flat face, a disc mounted for rotation with respect to the body about an axis and having a generally flat second face disposed in mating engagement with said first face, said first and second faces having ports therein adapted to be brought into registry as the disc is rotated relative to the valve body, a single cam operated arm connected to the disc and extending outwardly from the disc and having an outer end portion, said arm being the only cam operated arm connected to said disc and said arm being disposed rearwardly at a trailing angle with respect to the direction of travel of said valve assembly, and cam means mounted on the supporting structure and including a cam surface disposed to be engaged by said end portion as the valve assembly travels with the carrier, said cam means also including a track disposed downstream in the direction of travel of the valve assembly from said cam surface, said track having opposed spaced wall to receive and confine said end portion, said track serving to precisely position the arm and disc as the end portion leaves said cam surface.

4,253,506
SPIRAL PLANE BIT AND ROTARY CUTTER INCORPORATING SAME

Koichi Shimohira, No. 4-5-2, Takanodai, Nerima-ku, Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 951,160
Claims priority, application Japan, Jun. 27, 1978, 53/88070[U]
Int. Cl.³ B27C 1/00
U.S. Cl. 144—221 10 Claims



1. In an improved rotary cutter for a workpiece, said cutter being of the type combining at least one spiral plane bit including a mounting plate of substantially uniform width formed in the shape of a spiral band having an inner face lying on a cylindrical surface of predetermined radium, said mounting plate having a plurality of fastening holes spaced therealong, and a bit edge at one lateral margin of said mounting plate; and a rotary shank on which said at least one bit is mounted, the improvement comprising:

said shank including a plurality of radially extending threaded bores arranged in groups, each group being positioned to be in registry with a number of said fastening holes, defining a respective group of said fastening holes when said at least one bit and said shank are in a predetermined, unique rotational angular relationship; and

a plurality of screws each dimensioned to extend freely through one of said fastening holes with sufficiently close tolerance to avoid lateral movement of said screw therein, whereby any appreciable relative movement between said bit and said shank is eliminated, each screw extending through one of said fastening holes and being engaged in a respective one of said threaded bores;

the rotational angular relationship between said bit and said shank being adjustable by securing said bit to said shank so that said screws are engaged in a selected group of said threaded bores and extend through the group of fastening holes corresponding thereto, the optimum bit edge protrusion being thereby selected.

4,253,507
REINFORCED CONTAINER FOR BULK MATERIALS

Robert R. Williamson, Dallas, Tex., assignor to Better Agricultural Goals Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 460,053, Apr. 11, 1974, Pat. No. 4,113,146. This application Sep. 11, 1978, Ser. No. 941,254
Int. Cl.³ B65D 33/02
U.S. Cl. 150—1 8 Claims

1. A reinforced collapsible receptacle for handling flowable materials in semi-bulk quantities of the order of 2,000 pounds or more, comprising:

a seamless multiple-ply tube having an inner ply and an outer ply, and having upper and lower ends;

a reinforced sheet wrapped about said multiple-ply tube and encompassing said multiple-ply tube from the lower end at least to a height to which the receptacle is filled with bulk materials;

said reinforced sheet including a plurality of reinforcing filaments disposed therein extending circumferentially about said multiple-ply tube to reinforce said tube against bursting and tearing when filled with flowable bulk materials;

said reinforced sheet including a leading edge and a following edge, with said leading edge being overlapped with and adhesively secured to said following edge;

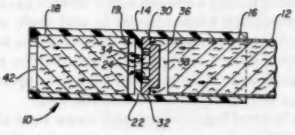
the lower end of said multiple-ply tube being folded and adhesively secured together to form a closed, folded satchel bottom; and

the upper end extending above said reinforced sheet and above the bulk materials contained within the receptacle a sufficient distance, so that said multiple-ply tube may be gathered and clamped.

4,253,508
SELECTIVE FILTERING OF TOBACCO SMOKE BY ENHANCED FILTRATION EFFICIENCY

Conrad A. Bodai, Davis, and Balazs I. Bodai, Sacramento, both of Calif., assignors to Bodai Industries, Inc., Dallas, Tex.

Filed Jan. 19, 1979, Ser. No. 4,818
Int. Cl.³ A24D 3/04; A24B 15/00; A24F 7/04
U.S. Cl. 131—10.5 14 Claims



1. In a tobacco smoke filter device, the improvement comprising:

a stimulated coagulation and adsorption filter for removing constituents from tobacco smoke to be positioned in the flow thereof;

ultrasonic generator means responsive to the flow gradient induced by the smoker for generating an ultrasonic field of sufficiently high frequency to stimulate coagulation and adsorption of constituents in the flow; and

amplitude multiplier means energized by the flow to increase the vibrational energy to the constituents in the flow sufficiently to promote coagulation and adsorption at the generated frequencies.

4,253,509
THEFT DETERRENT LOCKING NUT

James R. Collet, 315 Lynn Dr., Lafayette, La. 70518

Filed Apr. 6, 1979, Ser. No. 27,658
Int. Cl.³ F16B 39/00
U.S. Cl. 411—214 11 Claims

1. A theft deterrent nut-type device for securing a plurality of pieces of material together, said device being resistant to removal using conventional wrenches, so as to deter a potential thief from removing said device, comprising:

(a) a nut having:

(1) a lower surface

(2) an internal bore perpendicular to said lower surface, said bore being internally threaded along a lower portion thereof,

(3) a smooth upper surface having a circular cross-section

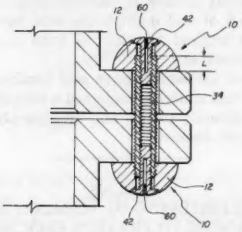
perpendicular to said bore, said upper surface terminating at the periphery of said lower surface, thereby prohibiting a typical wrench from effecting a grip upon said nut to prevent removal thereof, and

(4) a first pocket having a polygonal cross-section centered along the axis of said bore forming multiple driver engaging surfaces within an upper portion of said bore for receiving an installation device having an identical cross-section for rotating said nut about said axis;

(b) a male threaded member having:

(1) external threads adapted to engage said internal threads of said nut, and

(2) an internal bore along the axis thereof, said bore having internal threads of less pitch than that of said male



member external threads, for receiving the threaded shaft of a locking screw; and

(c) a locking screw having:

(1) an externally threaded shaft for threadedly engaging said internal bore of said male member,

(2) a head having a smooth upper surface having a circular cross-section perpendicular to said shaft, and having a configuration so as to essentially conform to the configuration of said nut upper surface, thereby prohibiting a typical wrench from effecting a grip upon said screw head to prevent removal thereof, and

(3) an internal bore through said screw head along the axis of said shaft, terminating in a second pocket for receiving an installation device for rotating said locking screw about its axis.

4,253,510

INTEGRAL WHEEL AND PNEUMATIC TIRE

John Z. De Lorean, 280 Park Ave., New York, N.Y. 10017

Filed Oct. 22, 1979, Ser. No. 86,900

Int. Cl.³ B60B *9/00*

U.S. Cl. 152—9 **3 Claims**

1. An integral wheel and pneumatic tire assembly comprising:

a wheel having

a generally radially extending body portion, said body portion including inner and outer surfaces,

a flat rim portion extending generally horizontally from the upper end of said body portion and cantilever-supported therefrom;

a tire having

an elastomeric annular tube member being generally oval in cross section and including

a pair of transversely spaced, arcuate, inner and outer side walls,

a first relatively flat crown portion connecting the upper ends of said side walls,

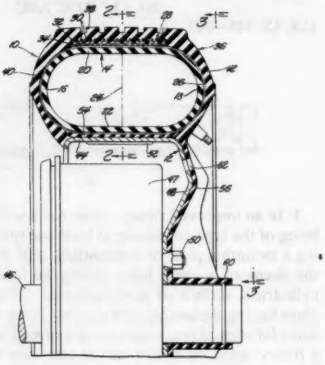
a second relatively flat portion connecting the lower ends of said side walls and disposed superadjacent said wheel rim portion,

a circumferential mid-plane generally normal to the rotative axis of said wheel and midway between said side walls, said wheel body portion being laterally offset throughout its radial length from said circumferential plane toward said outer side wall;

a reinforced elastomeric carcass formed about said tube member, said carcass including

laterally spaced inner and outer side walls,

a ground-engaging tread intermediate the radially outer ends of said carcass side walls,



a flat rim-engaging portion intermediate the radially inner ends of said carcass side walls, said rim-engaging portion being bonded to said wheel rim portion, a wheel covering portion integrally formed with and extending radially inwardly from the outer side wall of said carcass, said wheel covering portion being coextensive with and bonded to the outer surface of said wheel body portion.

4,253,511

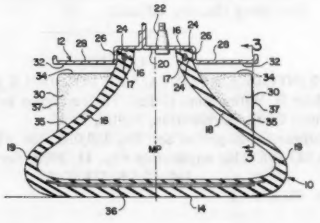
TIRE WITH SUPPORTABLE SIDEWALLS

Walter W. Curtiss, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 6, 1979, Ser. No. 64,288

Int. Cl.³ B60C *17/00, 13/00*

U.S. Cl. 152—330 RF **25 Claims**



1. A tire for use with a rim having an annular central portion, means including a pair of rim flanges for retaining the tire on the rim, and a pair of annular support members extending axially outwardly of the means for retaining the tire on the rim, the tire comprising a ground-engaging tread having a width axially of the tire which is greater than the distance axially of the tire between the rim flanges, a pair of bead portions for engagement with the means for retaining the tire on the rim, a pair of shoulders connected to the tread axially outwardly thereof, a pair of sidewalls, the length of said sidewalls extending between the shoulders and the bead portions, and sidewall appendages positioned on the sidewalls and extending in axial and radial directions such distances that said sidewall appendages supportively engage the support members to maintain the sidewalls in substantially the same shape generally over their

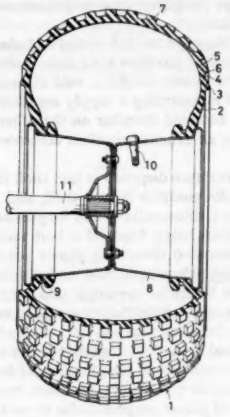
length when the tire is uninflated and under normal load as the shape of the sidewalls when the tire is under normal inflation pressure and load, said sidewall appendages being positioned on the sidewalls so as to be spaced from the support members when the tire is under normal load and inflation pressure.

4,253,512

LOW PRESSURE CORDLESS AND TUBELESS TIRE

Tomoaki Yoshioka, Miyoshi, and Keiji Fujioka, Kishiwada, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Ohtsu Tire Kabushiki Kaisha, Izumiotsu, both of, Japan

Filed Sep. 25, 1979, Ser. No. 78,704
Claims priority, application Japan, Sep. 30, 1978, 53/133518
Int. Cl.³ B60C *11/00, 13/00*
U.S. Cl. 152—353 G **7 Claims**



1. A low pressure cordless and tubeless tire comprising a body having a tread section and side sections, said tread section having end shoulder regions, said body having a region of maximum width and including at each side section in the vicinity of said region of maximum width a first annular reinforcement rib extending along the entire circumference of the tire body, and at least one second annular reinforcement rib located between said side section and the shoulder region of the tread section, said second rib extending along the entire circumference of the tire body and defining an annular groove with said first annular reinforcement rib, the operating pressure of said tire being between 0.1 and 0.3 Kg/cm^2.

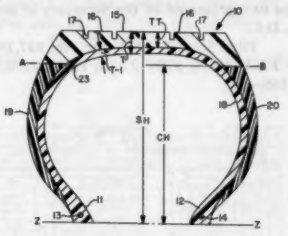
4,253,513

CAST TIRE AND METHOD OF MANUFACTURE

William M Larson, Hudson; Charles J. Pearson, Akron, both of Ohio, and Thomas H. Rogers, Clearwater, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1979, Ser. No. 80,938
Int. Cl.³ B60C *1/00;* **B29H** *3/08*
U.S. Cl. 152—354 R **12 Claims**

9. An annular pneumatic tire for mounting on a rim comprising bead portions, a crown portion spaced radially outward from said bead portions and sidewalls extending from said bead portions to said crown portion, a strong cast inner layer of relatively high modulus material extending between said bead portions, a tread portion of relatively low modulus material adhered to said inner reinforcing layer at a position radially outward of said crown portion and sidewall portions of microcellular relatively low modulus material positioned between



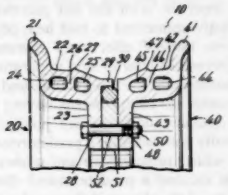
and adhered to said reinforcing layer, said tread portion and said bead portions.

4,253,514

LIGHT ALLOY SPLIT WHEEL RIM

Kazuo Imamura, Kaga, Japan, assignor to Daido Kogyo Co., Ltd., Ishikawa, Japan

Filed Sep. 6, 1979, Ser. No. 72,845
Claims priority, application Japan, Sep. 26, 1978, 53-132369[U]
Int. Cl.³ B60B *25/00, 25/22*
U.S. Cl. 152—405 **8 Claims**



1. A light alloy divided wheel rim for use in connection with a tubeless tire in a two-wheeled vehicle and which is adapted to be connected to a wheel hub by means of plate spokes, said rim comprising:

a pair of substantially similar rim members fastened together in face-to-face relationship;

each said rim member including an intermediate bead, an outer flange integral with and extending radially outwardly from the outer side edge of said bead, and an inner flange integral with and extending radially inwardly from the inner side edge of said bead;

each said outer flange being a solid member;

each said bead including means for reinforcing the respective said rim member, said reinforcing means comprising a plurality of discrete cavities formed entirely within said bead, said cavities being separated from each other by an integral annular partition within said bead and extending substantially vertically of the axis of said rim member;

said rim members being assembled with said inner flanges facing each other;

bolt means extending through said inner flanges for fastening said rim members together;

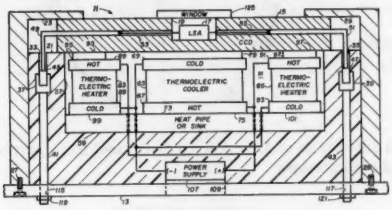
annular seal means positioned between said inner flanges for forming a seal between said rim members when said rim members are fastened together; and

means for protecting said seal means from excessive fastening force applied by said bolt means.

4,253,515
INTEGRATED CIRCUIT TEMPERATURE GRADIENT AND MOISTURE REGULATOR

Edmund Swiatosz, Maitland, Fla., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1978, Ser. No. 947,280
Int. Cl.³ F25B *29/00*; F28F *27/00*; H01L *23/02*; H02B *1/00*
U.S. Cl. 165—61 **27 Claims**



1. An apparatus temperature and moisture regulator, comprising in combination:

an apparatus whose temperature and moisture is to be regulated;

means effectively connected to said apparatus for the effective packaging thereof in such manner as to effect the support thereof and thermally isolate it from its ambient environment;

a heat pipe extending through one of the walls of said packaging means;

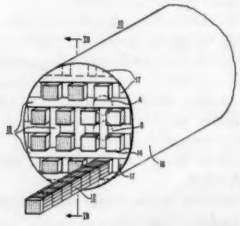
a thermoelectric cooler means having a hot junction and a cold junction, with the hot junction thereof effectively thermally connected to said heat pipe, and with the cold junction thereof effectively thermally connected to a predetermined area of said apparatus whose temperature and moisture is to be regulated; and

a thermoelectric heater means having a hot junction and a cold junction, with the hot junction thereof effectively thermally connected to a predetermined area of said apparatus whose temperature and moisture is to be regulated that is located a predetermined distance from the cold junction of the aforesaid thermoelectric cooler means, and with the cold junction thereof effectively thermally connected to said heat pipe.

4,253,516
MODULAR HEAT EXCHANGER

Angelo R. Giardina, Marple Township, Delaware County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 22, 1978, Ser. No. 918,126
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—78 **4 Claims**



1. A modular shell and tube heat exchanger comprising:

a shell having a longitudinal axis;

a plurality of tube bundle-modules disposed in said shell in horizontal rows, each of said tube bundle modules constituting a plurality of tubes extending parallel to said longitudinal axis, a tube sheet disposed on each end of said tubes with said tubes extending therethrough, a plurality of tube supports disposed between said tube sheets and having openings therein for receiving said tubes, and a tube bundle module stiffening structure attached to said tube sheets and tube supports for maintaining said tube bundles' integrity and rigidity, said stiffening structure comprising

a plurality of longitudinal framework members secured to the tube bundle module's tube supports and the tube sheets exclusively along the outer periphery of said module, said longitudinal framework members being substantially parallel to said shell's longitudinal axis and

a plurality of transverse framework members diagonally disposed between said longitudinal framework members along the outer periphery of said module, said transverse members being secured to the edges of said tube supports and at least one longitudinal framework member, said framework members obstructing a small area of said module's outer periphery so as to permit access to all sides of said module;

a chamber disposed on each end of said shell wherein each of said chambers provides fluid communication to the tubes in all tube bundle-modules, said chamber on one end of said shell constituting a supply manifold common to said modules and said chamber on the other end of said shell providing an exhaust manifold common to said modules; and

a support structure disposed in said shell for supporting said tube bundle-modules in said shell, said support structure having end, intermediate, and longitudinal members, said end members being disposed at both ends of said shell and being connected thereto in planes perpendicular to said shell's longitudinal axis, said end members in each plane forming a lattice of openings, said longitudinal members being disposed substantially parallel to said shell's longitudinal axis between said end lattice members, said end and longitudinal members together defining a plurality of voids into which said tube bundle-module are receivable, said intermediate support members being disposed in a plurality of planes perpendicular to said shell's longitudinal axis, and said intermediate support members comprising a plurality of structural plates disposed within the plane between said tube bundle modules, said plates having recesses therein for receiving the adjacent longitudinal support members and protrusions separating said recesses; and

a plurality of struts disposed between the protrusions of adjacent structural plates,

a plurality of said intermediate support members being connected to said shell and longitudinal members so as to provide support therefor.

4,253,517
WASTE HEAT UTILIZATION SYSTEM

Robert W. Timmerman, 25 Upton St., Boston, Mass. 02118

Division of Ser. No. 735,079, Oct. 22, 1976, Pat. No. 4,168,030. This application Sep. 28, 1978, Ser. No. 946,799
Int. Cl.³ F28F *27/02*; F28B *9/04*
U.S. Cl. 165—97 **7 Claims**

1. A condenser system for use in a waste heat utilization system comprising;

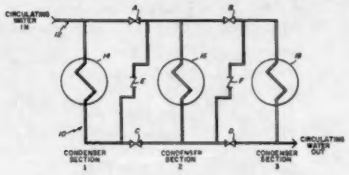
a plurality of condensers each for passing cold water for the purpose of heating the water and each including water inlet means coupling from a source of water and outlet means,

fluid conduit means including a number of conduit sections intercoupling the plurality of condensers,

and valve control means including a plurality of flow control valves connected in the conduit means and means for controlling the valves to be in a first position interconnecting the condensers in parallel with single pass of water through each condenser and to be in a second position

interconnecting the condensers in series with multiple pass of water through the condensers,

said fluid conduit means intercoupling said condensers in a parallel arrangement and said flow control valves comprising at least three valves including a first valve between the inlet means of the condensers, a second valve between



the outlet means of the condensers, and a third valve coupling between said first and second valves,

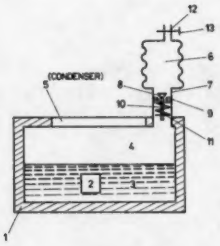
said first and second valves being controlled valves and said third valve being a check valve coupling between an outlet means of one condenser and an inlet means of another condenser.

4,253,518

COOLING INSTALLATION WORKING THROUGH A CHANGE IN PHASE

Didier Minesi, Saint Fargeau-Ponthierry, France, assignor to Matra, Paris, France

Filed Jan. 26, 1979, Ser. No. 6,822
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—105 **3 Claims**



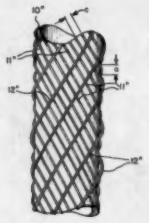
1. In a cooling installation operating through a liquid-vapor change in phase comprising a chamber (1) containing an element (2) to be cooled and a liquid (3) which is vaporizable by taking heat from element (2) and a vapor space (4) above liquid (3), a condensor (5) associated with chamber (1) for condensing vaporized liquid to its liquid state, the improvement comprising expansion means (6) connected to chamber (1) by valve means (8, 9) above the level of liquid (3), valve means (8, 9) being calibrated to open at a predetermined pressure which depends on the nature of liquid (3) and the desired temperature in chamber (1) or element (2), expansion means (6) being normally closed to the atmosphere surrounding chamber (1) and being expansible by vapor and air received from chamber (1) when valve means (8, 9) is opened, and vent means (12, 13) connected to expansion means (6) above the level of any condensed liquid for releasing air but not liquid from expansion means (6).

4,253,519

ENHANCEMENT FOR FILM CONDENSATION APPARATUS

Leslie C. Kun, and Elias G. Ragi, both of Williamsville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,190
Int. Cl.³ F28B *9/08*
U.S. Cl. 165—110 **12 Claims**



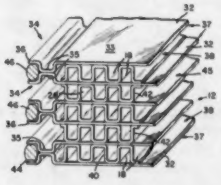
1. As an article of manufacture, a prefabricated condensation surface enhancement comprising a plurality of enhancement elements for collecting condensate from the surface between adjacent elements thereby thinning the condensate film on a portion of said surface between said adjacent elements and a plurality of strand-type connecting elements for supporting and maintaining the relative spacing of said enhancement elements said connecting elements crossing over and being attached to said enhancement elements such that they are essentially entirely spaced from the condensing surface position, said prefabricated network being formed from a wettable polymeric material.

4,253,520

HEAT EXCHANGER CONSTRUCTION

Johan A. Friedericy, Palos Verdes Estates; Gary F. Mueller, Huntington Beach, and James R. Lohay, Santa Ana, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 26, 1978, Ser. No. 955,284
Int. Cl.³ F28F *3/00*
U.S. Cl. 165—166 **25 Claims**

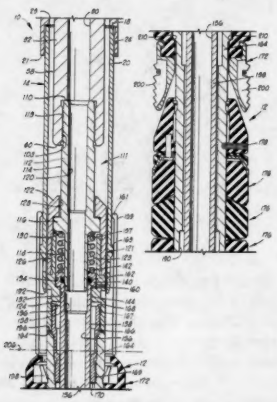


1. A heat exchanger construction comprising a plurality of plates connected in stacked relation and formed to define layered fluid flow paths for passage of first and second fluids in heat exchange relation with each other, said connected plates having peripheral edges forming a plurality of peripheral recesses; and elongated thermal mass means received within said peripheral recesses for protecting said peripheral edges against stress failure.

4,253,521
SETTING TOOL

Ronald E. Savage, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 23, 1978, Ser. No. 953,941
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—123 **16 Claims**



1. An actuating tool apparatus for actuating a valve of a downhole mechanism, said downhole mechanism including a downhole mechanism mandrel with a sliding valve sleeve disposed therein, said actuating tool apparatus comprising:

an actuating mandrel, for insertion in said downhole mechanism mandrel and engagement with said valve sleeve to selectively vary said sleeve between a closed position and an open position; and

a load transfer means including:

a load transfer casing adapted for connection to a pipe string and having a support surface constructed for engagement with an upper portion of said downhole mechanism mandrel located above a point of axial support of said downhole mechanism mandrel, so that said support surface may transfer a weight of said pipe string to said upper portion of said downhole mechanism mandrel when said pipe string is lowered to move said actuating mandrel and valve sleeve downward so that the weight of said pipe string is supported in compression by said downhole mechanism mandrel; and

resilient means, connected between said load transfer casing and said actuating mandrel, for urging said actuating mandrel and valve sleeve downward when said support surface is in engagement with said upper portion of said downhole mechanism mandrel.

4,253,522
GRAVEL PACK TOOL

John R. Setterberg, Jr., Richardson, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 21, 1979, Ser. No. 41,001
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—278 **13 Claims**

1. A well tool for controlling fluid communication from the interior of the tool to the exterior of the tool, comprising:

a. a housing having a longitudinal bore extending therethrough;

b. means for connecting each end of said housing to other well tools;

c. a sleeve slidably disposed within said longitudinal bore and having a longitudinal passageway extending therethrough;

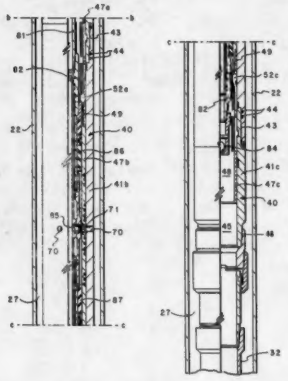
d. a lateral port communicating fluid between said longitudinal bore and the exterior of said housing;

e. a lateral passageway extending through the wall of said sleeve;

f. means for sealing between the outside diameter of said sleeve and the inside diameter of said housing;

g. said sealing means spaced longitudinally on either side of said lateral passageway;

h. said sleeve having three positions with respect to said housing, the first position allowing fluid communication



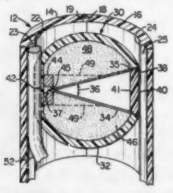
from the longitudinal passageway of said sleeve through said lateral passageway and said lateral port to the exterior of said housing, said sleeve slidable longitudinally in one direction with respect to said housing to its second position blocking communication through said lateral port and said sleeve slidable longitudinally in the other direction with respect to said housing to its third position blocking communication through said lateral port; and

i. means, carried on said sleeve and the inside diameter of said housing, for releasably holding said sleeve in each position.

4,253,523
METHOD AND APPARATUS FOR WELL PERFORATION AND FRACTURING OPERATIONS

Barrie G. Ibsen, 14 2nd Ave. SW., P.O. Box 277, Cut Bank, Mont. 59427

Filed Mar. 26, 1979, Ser. No. 23,657
Int. Cl.³ E21B *43/117, 43/263, 43/27*
U.S. Cl. 166—299 **32 Claims**



1. A shaped charge device, comprising:

a generally spherical container with a hollow interior;

a conical liner with its base positioned against the interior surface of said spherical container and tapering inwardly to its apex positioned in close proximity to the diametrically opposite side of the interior surface of said spherical container;

an annular booster charge of high speed explosive with a diameter at least one-half as large as the base of said coni-

cal liner in axial alignment with said conical liner and against the interior wall of said spherical container diametrically opposite said base of said conical liner, the apex of said conical liner extending into the center of said annular booster charge; and

a primary explosive charge positioned in the interior of said spherical container in sufficient quantity to substantially fill the remaining space therein around said conical liner and said booster charge.

27. The method of perforating and stimulating the rock formation in a well, comprising the steps of:

packing a secondary explosive around a shaped charge of primary explosive in a shaped charge spherical container having a conical liner therein, said secondary explosive having a slower detonating speed than the detonating speed of the primary explosive;

positioning the shaped charge spherical container; primary and secondary explosives in the well at the desired perforating depth; and

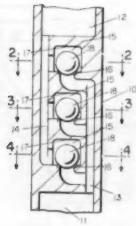
simultaneously detonating said primary and secondary explosives in said shaped charge spherical container.

4,253,524

HIGH FLOW CHECK VALVE APPARATUS

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,921
Int. Cl.³ E21B *34/08*; F16K *15/04*
U.S. Cl. 166—325 **1 Claim**



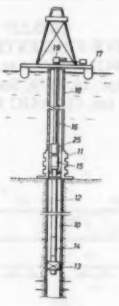
1. In an oil well pumping apparatus for pumping oil at a high volume rate from a subterranean well, the improvement comprising: a check valve apparatus mounted in the casing below the pump, said apparatus comprising a tubular housing sealingly mounted in said casing, said housing defining an axially extending inlet passage communicating with the interior of the casing below the check valve apparatus and a separate axially extending outlet passage communicating with the pump inlet, said passages being axially overlapped and the overlapped portions respectively constituting annular segments, a plurality of axially spaced ball valve chambers interconnecting the overlapped portions of said inlet and outlet passages, each said chamber including a transversely disposed circular ball seat, and a ball element disposed in each said chamber and cooperating with said ball seat to prevent reverse flow from said outlet passage to said inlet passage, said inlet and outlet passages each having a fluid flow area greater than a fluid flow area of any one of said valve chambers, the fluid flow area of said inlet passage annular segment decreasing from a first valve chamber to each succeeding valve chamber and the fluid flow area of said outlet passage annular segment increasing from first valve chamber to each succeeding valve chamber.

4,253,525

RETAINER VALVE SYSTEM

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,620
Int. Cl.³ E21B *33/035, 43/12*
U.S. Cl. 166—336 **9 Claims**



1. Valve apparatus adapted for use in a well, comprising:

an elongated body having means at each end adapted for connection to a pipe string, said body having a tubular structure extending concentrically thereof defining a flow passage, said tubular structure and body having portions laterally spaced to provide an annular cavity therebetween;

normally open valve means including a valve element mounted on said tubular structure and arranged for rotation about a fixed transverse axis between an open position and a closed position with respect to such flow passage;

actuator means movable longitudinally in said cavity and carrying eccentric means cooperable with said valve element for rotating said valve element between said open and closed positions;

hydraulically operable means in said cavity coupled to said actuator means and responsive to the pressure of a control fluid in a control line for closing said valve means; and

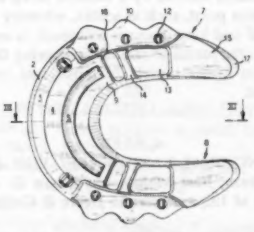
spring means cooperable with said actuator means for tending to open said valve means.

4,253,526

HORSE SHOE

Marcel F. L. Alletrux, Breuil Barret, 85120 La Chataigneraie, France

Filed Dec. 11, 1978, Ser. No. 967,977
Claims priority, application France, Dec. 14, 1977, 77-37724
Int. Cl.³ A01L *7/04*
U.S. Cl. 168—4 **4 Claims**



1. A horse shoe comprising a crescent shape plate with two heels, a toe, an inner edge, an upper face intended for engaging with the horse hoof wall and sole, and an underface, a lower rib of substantially rectangular cross-section on said underface

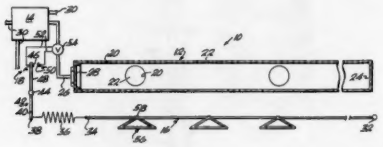
extending along said inner edge, the plate and the rib being made of a plastically deformable material, wherein the rib has heel portions of reduced thickness which are suppressed and a portion of increased thickness extending in front of the heel portion substantially from the rear third of the horse shoe up to its medium portion, said rib extending in the rear third portion transversely to the inner edge.

4,253,527

HEAT RESPONSIVE FIRE EXTINGUISHING SYSTEM

George D. Wilhoit, 4421 Meade Ave., Fort Myers, Fla. 33901

Filed Apr. 16, 1979, Ser. No. 30,516
Int. Cl.[3] A62C *37/12*
U.S. Cl. 169—57 **4 Claims**



1. A fire suppression system comprising, releasably tensioned heat sensor means, a remote pressurized source of any appropriate fire extinguishing material such as carbon dioxide, a heat sensitive delivery means for said fire extinguishing material, means to permit the flow of said pressurized fire extinguishing material from said source to said delivery means, and means interconnected between said tensioned heat sensor means, and means operable in a first position to maintain said fire extinguishing material in said source and responsive to an unusually high ambient temperature about said heat sensor means which releases said tension on said heat sensor means to move said operable means to a second position to permit the flow of said fire extinguishing material from said source through said means to permit the flow of fire extinguishing material to said delivery means, wherein said heat sensor means comprises a generally linearly oriented flexible metal line including expansion means and having a first end anchored in a spaced relation to a first end of said delivery means, and a second end adjacent to a second end of said delivery means and having a tension spring connection to maintain a normally open switch condition, said interconnected means operably connected to said means to permit said flow in a manner so as to maintain said fire extinguishing material in said source during said normally open switch condition and to move to a switch closed position to open said means to permit the flow from said source to said delivery means in response to a reaction of said high ambient temperature on said expansion means, wherein said linearly oriented line is interrupted along its length by a plurality of spaced apart loops, said loops comprising said expansion means, formed in said line, and including fixed loop closures formed by a suitable metal having a relatively low fusion point, such as solder, whereby fusion of any one or more of said loop closures will result in an extension of said line under the forces of said tension spring thereby releasing the tension forces therein to move said switch to said closed position.

4,253,528

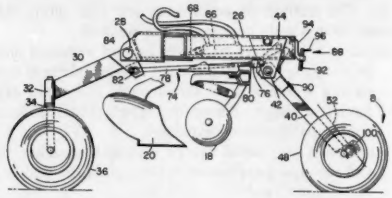
PIVOTING DUAL LAND WHEEL FOR A PLOW

James F. Sullivan, East Moline, and Loren G. Arnold, Rock Island, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Nov. 27, 1978, Ser. No. 964,244
Int. Cl.[2] A01B *15/14*
U.S. Cl. 172—386 **13 Claims**

1. In an earthworking implement having a frame and a plurality of earthworking tools depending from the frame, a ground wheel assembly for supporting the frame and for raising and lowering the frame between operating and transport positions comprising:

an arm having first and second ends, and connected at the first end to the frame and vertically positionable with respect thereto between first and second positions corresponding to the operating and transport positions, respectively, an axle member pivotally mounted on the arm at a second end thereof and rockable about an axis, a pair of



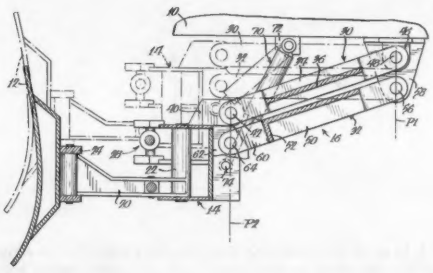
ground-engaging wheels carried by the axle member on opposite sides of the axis, the axis shifting as the arm changes positions whereby in the first position the axle member rocks to provide relative vertical movement of the wheels with respect to each other and in the second position the axle member rocks to provide castering of the wheels during turns, and means for moving the arm between the first and second positions.

4,253,529

SUPPORT STRUCTURE FOR DOZER BLADE

Roland N. Nissen, Wichita, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 12, 1978, Ser. No. 950,594
Int. Cl.[3] E02F *3/76*
U.S. Cl. 172—831 **3 Claims**



1. A pivoting structure for a dozer blade supported by a dozer frame from a vehicle having pivoting support wheels, comprising:

(a) lifting means connected to said vehicle frame for raising and lowering said dozer frame and said dozer blade as a unit; and

(b) mounting means for supporting said dozer frame on said vehicle frame adjacent to said pivoting support wheels, said mounting means having first and second rigid linkages of fixed equal length extending generally longitudinally on said vehicle frame and being vertically spaced from each other,

said first linkage having first and second transversely spaced pivotal connections defining a first horizontal pivot axis on said vehicle frame between said support wheels, and having first and second transversely spaced pivotal connections defining a second horizontal pivot axis on said dozer frame, said first and second transversely spaced pivotal connections defining said first horizontal pivot axis being separated a greater transverse distance than said first

and second spaced pivotal connections defining said second horizontal pivot axis, said first and second transversely spaced pivotal connections defining said first horizontal pivot axis and said first and second transversely spaced pivotal connections defining said second horizontal pivot being joined by a transverse plate to define a generally flat trapazoidal shaped first linkage, said transverse plate strengthening said first linkage against side thrusts when said blade is angled,

said second linkage having first and second transversely spaced pivotal connections defining a first horizontal pivot axis on said vehicle frame and at least one pivotal connection defining a second horizontal pivot axis on said dozer frame,

said horizontal pivot axes on said vehicle frame being substantially in the same vertical plane,

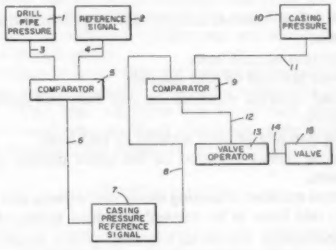
said trapezoidal shape, the equal length of said first and second linkages, and the position of said vehicle frame horizontal axes having the effect of positioning said dozer frame adjacent said vehicle frame, providing clearance for the pivoting of said support wheels, and retaining said dozer frame in a substantially vertical plane when said dozer frame and said dozer blade are moved between raised and lowered positions by said lifting means.

4,253,530

METHOD AND SYSTEM FOR CIRCULATING A GAS BUBBLE FROM A WELL

Martin J. Sharki; William A. Rehm, and Woodrow E. Renfro, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 9, 1979, Ser. No. 82,848
Int. Cl.³ E21B *7/00, 21/08, 47/06*
U.S. Cl. 175—25 **7 Claims**



1. A system for controlling the bottom hole pressure of a well, wherein a fluid is circulated therethrough to an outlet from the well, comprising: a choke for regulating pressure at the outlet, means for sensing pressure of the fluid entering the well, means for sensing the pressure of fluid leaving the well, means for comparing said sensed pressures with desired pressures including means to change a desired pressure of the fluid leaving the well in accordance with sensed changes of the fluid pressure entering the well, and means responsive to a difference between the sensed and desired pressures for operating the choke in a manner to reduce said difference.

6. A method of circulating a gas bubble from a well, comprising the steps of:

providing an incrementally increasing casing pressure reference signal by detecting each occurrence of the drill pipe pressure falling a predetermined amount below a drill pipe pressure reference signal;

comparing the casing pressure reference signal with the actual casing pressure; and

closing a throttling valve a corresponding amount if the actual casing pressure is less than the casing pressure reference signal and opening the throttling valve a corresponding amount if the actual casing pressure is greater than the casing pressure reference signal.

4,253,531

SELF-BALANCING VIBRATORY DRILL APPARATUS

Ladislav J. Boros, 1460 52nd St., Brooklyn, N.Y. 11219

Filed Oct. 17, 1979, Ser. No. 85,729
Int. Cl.³ E21B *4/06*
U.S. Cl. 175—56 **32 Claims**

1. Rotary drill apparatus comprising:

an elongate, substantially tubular casing adapted to be connected to a rotating shaft or the like;

a drill assembly comprising a plurality of elongate pipe members coaxially extending with respect to a common axis, each being located one within the other so as to define an outer pipe member and at least one inner pipe member, said drill assembly having an upper region which is received within the lower interior region of said casing and a lower region defining a drill head, means for interconnecting said pipe members such that said pipe members are mutually fixed to each other for simultaneous rotation about said axis and such that each pipe member is free to move in the axial direction independently relative to the other pipe members; and

means for applying a torque to said drill assembly tending to rotate said drill assembly about said axis and for periodically applying to at least one of said pipe members an impulse force in the direction of said axis so as to vibrate the same.

4,253,532

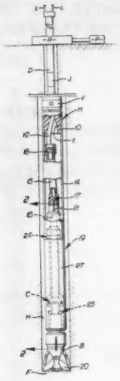
IN-HOLE MOTOR DRILL WITH LOCKING BIT CLUTCH

Bela Geczy, Glendale, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 20, 1979, Ser. No. 67,882
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **23 Claims**

1. An in-hole motor assembly adapted for connection with a rotatable pipe string and a bit, said assembly comprising: a motor stator including a housing structure adapted to be installed in a pipe string; a rotor in said stator; a shaft connected at one end to said rotor for rotation therewith and extending at its other end from said housing to drive a drill bit; thrust bearings between said shaft and said rotor and said housing; a

clutch engageable between said shaft and said housing to couple said housing and shaft for mutual rotation upon predetermined movement of said housing, relative to said shaft, in a direction away from the other end of said shaft.

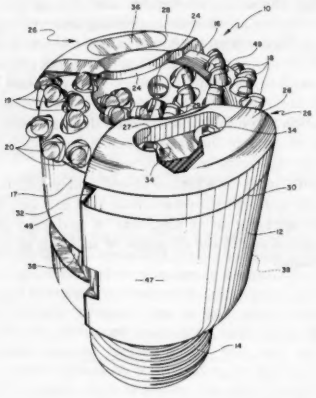


4,253,533

VARIABLE WEAR PAD FOR CROSSFLOW DRAG BIT

William Baker, III, Costa Mesa, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 5, 1979, Ser. No. 91,649
Int. Cl.[3] E21B *10/46*
U.S. Cl. 175—329 **14 Claims**



1. A diamond studded insert drag bit apparatus having a multiplicity of individual diamond insert cutter blanks inserted in the face of said bit, said bit forming at least one hydraulic passage that communicates between the face of the bit and an interior chamber formed by said bit, said bit comprising:

a substantially cylindrical drag bit body having a relatively flat first face end and a second pin end, and

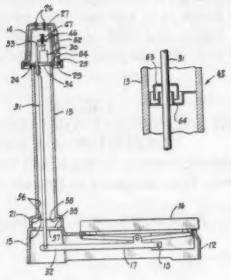
at least one wear pad having a support base at one end and a wear surface at an opposite end, said pad being attached to said first face end of said drag bit body at said support base of said wear pad, said wear pad is attached to said first face end of said drag bit body by at least one bolt recessed within said wear pad, said wear pad being positioned adjacent said multiplicity of diamond inserts, said wear surface extends beyond said first face end of said drag bit, the diamond cutting tips of said diamond insert cutter blanks extend partially beyond the wear surface of said pad, said pad forms at least one hydraulic passage between said first face end of said drag bit and a borehole bottom to direct hydraulic fluid exiting said at least one hydraulic passage over said adjacent multiplicity of diamond inserts to cool and clean said inserts and to remove detritus material from said borehole bottom, said wear pad assumes the shape of said borehole bottom to affect a hydraulic seal between said borehole bottom and said face of said drag bit.

4,253,534

SPLASH-RESISTANT SCALE

Donivan L. Hall, Worthington, Ohio, and Helmwart Fuelles, Cologne, Fed. Rep. of Germany, assignors to Reliance Electric Company, Cleveland, Ohio

Filed May 17, 1979, Ser. No. 39,585
Int. Cl.[3] G01G *21/28, 21/02*
U.S. Cl. 177—241 **21 Claims**



1. A splash-resistant scale comprising, in combination,

a base,

a fulcrum on said base,

a lever pivoted on said fulcrum,

a load receiver mounted on said base and acting on said lever,

an upstanding column secured to said base,

housing means mounted on the upper portion of said column,

a stress member extending along said column and connected to said lever to be stressed by a load acting on said load receiver,

a force-to-electrical transducer mounted in an enclosed manner in said housing means,

means coacting between the upper portion of said stress member and said transducer to actuate said transducer with stress on said stress member,

an indicator in said housing means,

electronic circuit means connected to said transducer and indicator to receive an input signal from said transducer to provide on said indicator an indication of the weight of a load acting on said load receiver,

and liquid splash-resistant means between the bottom of said base and said transducer.

4,253,535

NOVELTY MOTOR VEHICLE

Joseph Kleine; Michael Kleine; John Kleine, and Mary Kleine, all of Rte. 3, Box 81A, Troy, Mo. 63379

Continuation-in-part of Ser. No. 794,085, May 5, 1977, abandoned. This application Nov. 17, 1978, Ser. No. 961,737
Int. Cl.[3] B60K *17/06*
U.S. Cl. 180—6.24 **11 Claims**

1. A novelty motor vehicle having a chassis with a front and a rear, said motor vehicle comprising

a front suspension axle;

a pair of front wheels of predetermined diameter dependent upon the size of the vehicle and rotatably mounted on the front suspension axle of the chassis;

steering means coupled to the front wheels for turning said wheels to steer the vehicle when said wheels are on a supporting surface, said steering means including a steering wheel;

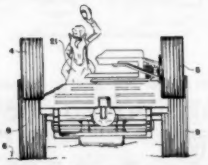
a pair of rear wheels of diameter greater than the predetermined diameter rotatably mounted on the rear of the chassis;

an engine mounted on the rear of the chassis farther from the front of the chassis than the rear wheels;

a transmission coupled to the engine;

adjustable weights mounted on the rear of the chassis on both sides of the engine farther from the front of the chassis than the rear wheels;

a special gear box mounted on the chassis and coupled to the transmission;



two drive shafts, one of said drive shafts extending from the transmission to the special gear box and the other of said drive shafts extending from the special gear box to the rear end to move the vehicle more slowly than a person's slow walk;

a stool type driver's seat mounted on the chassis at the steering wheel, said driver's seat comprising a post extending substantially upright from the chassis, a coil spring around the post and extending therebeyond and a seat member affixed to said spring;

a brake system for controlling the braking of the vehicle; and

an independent hand brake system for selectively braking either of the rear wheels to turn the vehicle about the braked wheel when the front wheels are on the ground or in the air due to the weight of the chassis aft of the rear wheels.

4,253,536

ARTICULATED, CROSS-COUNTRY VEHICLE

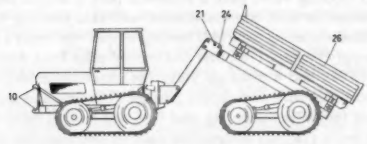
Thor F. Braathen, N-3358 Nedre Eggedal, Norway

Filed Feb. 23, 1979, Ser. No. 14,560

Claims priority, application Norway, Feb. 28, 1978, 780692

Int. Cl.[3] B60D *7/00;* **B60P** *1/04, 1/16;* **B62D** *55/06*

U.S. Cl. 180—9.5 **9 Claims**



1. An articulated, cross-country motor vehicle, especially for forestry work and the transportation of timber, comprising front and back pairs of bogies with belts, pivotally attached to the vehicle by means of transverse axles or shaft journals, wherein the bogies are independently and/or mutually pivotable and adjustable relative to one another in the vertical plane by means of hydraulic members, comprising a forward endless tread vehicle and a trailer having a hitch, the endless tread vehicle and the trailer being releasably coupled together and arranged so as to be mutually universally pivotable relative to one another, a coupling member at the forward end of the hitch for cooperation with a complementary coupling member on the endless tread vehicle; the hitch also having a first joint with a vertical axis of rotation and a second, lockable joint with a horizontal axis of rotation adapted in the locked state to hold the hitch in a position perpendicular to the vertical axis of rotation for the first joint; and a third, lockable joint with a horizontal axis of rotation positioned in the hitch at a distance removed from the second joint, adapted in the locked state to keep the hitch rigid and straight and in the unlocked state, together with said second joint, to permit the hitch to be bent upwards with the help of tipping means, in order thereby to tip the frame of the trailer backwards about a common axis of pivot from the frame and the rear pair of bogies; and axial thrust joints in the hitch on the sides of the first or third joints that are remote from each other.

4,253,537

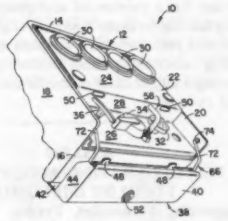
INSTRUMENT PANEL COVER

Dwayne J. Intveld, Hazelgreen, Wis., assignor to Deere & Company, Moline, Ill.

Filed Nov. 27, 1978, Ser. No. 963,917

Int. Cl.[3] B60K *37/00*

U.S. Cl. 180—90 **13 Claims**



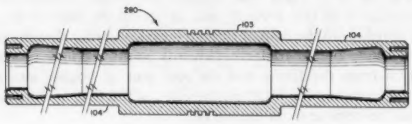
1. In a console including a panel housing including a pair of parallel, transversely spaced side walls joined by a rear wall, an inclined instrument panel supported by the housing and extending between respective inner surfaces of the side walls and having a lower end portion disposed adjacent the rear wall and a key-lockable instrument panel cover extending between the side walls and mounted for movement between an operative position covering at least a lower section of the panel and a stored position against the rear wall, an improved cover and mounting therefor, comprising: said inner surfaces of the side walls respectively having a pair of axially aligned blind bore receptacles located therein at locations adjacent to and above the lower edge of the panel; a generally U-shaped hinge rod defined by a central straight portion having dog-leg shaped end portions respectively joined to its opposite ends; said dog-leg shaped end portions being resiliently deflectable towards each other and respectively terminating in out-turned ends which are axially aligned with each other and respectively received in said blind bore receptacles; said central straight portion having the cover pivotally mounted thereon such that access to the hinge rod is blocked by cooperation of the panel cover and the side walls when the cover is in its operative position; and first and second locking means for respectively releasably securing the cover in its operative and stored positions.

4,253,538

BROADBAND SEISMIC ENERGY SOURCE

Richard M. Weber, and John W. Bedenbender, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 717,730, Aug. 24, 1976, Pat. No. 4,114,722.
This application May 1, 1978, Ser. No. 901,896
Int. Cl.[3] G01V 1/135
U.S. Cl. 181—119 7 Claims



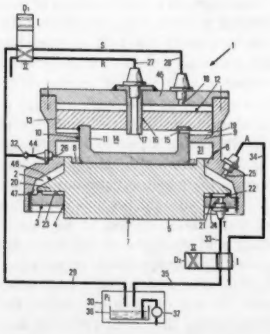
1. A vibratory seismic energy source having a double ended piston reciprocally mounted within the cylinder of a reaction mass, said cylinder including at least one port near each end thereof for admitting high pressure fluid alternately to exert forces against opposing ends of said piston, said piston being disposed in said cylinder such that when a piston over travel condition occurs at one end of said cylinder said piston substantially restricts the flow of fluid through said at least one port at that end of the cylinder trapping a volume of fluid between the face of said piston and said cylinder, whereby a breaking force is generated, said piston rod extending from each of said piston and projecting beyond the ends of said reaction mass, and said source further comprising a pair of relatively soft bushings, each lining an end of a bore through said reaction mass to provide mechanical support for said piston rod and for a portion of said piston, a portion of each said bushing having an inner diameter slightly greater than the diameter of said piston rod and adapted to support said piston rod in sliding relationship, and another portion of each said bushing having a larger inner diameter comprising a part of the wall of said cylinder.

4,253,539

DEVICE FOR GENERATING ACOUSTIC WAVES IN A FLUID BY IMPLOSION

Pierre Magneville, Vernouillet, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 2, 1979, Ser. No. 9,027
Claims priority, application France, Feb. 3, 1978, 78 03306
Int. Cl.[3] G01V 1/38, 1/14
U.S. Cl. 181—120 13 Claims



1. In a device for generating acoustic waves in a fluid medium by implosion, comprising an enclosure provided with a first chamber and a second chamber, a piston having a first end wall in permanent contact with the surrounding fluid and adapted to slide in the first chamber of the enclosure between a retracted position in the enclosure and a spaced apart position of maximum extension towards the exterior, said piston permanently isolating the inside of the enclosure from the surrounding fluid, a displaceable moving member adapted to contact the piston intermittently and to drive the piston to its spaced apart position, pressure means for applying unequal pressures on two opposite walls of the movable member and intermittent releasable locking means for maintaining the piston at its spaced apart position,

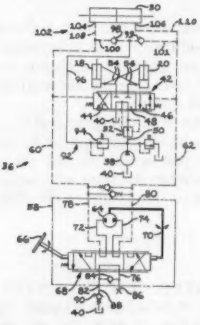
the improvement wherein the surface area of at least the wall of the movable member which is remote from the piston is greater than that of the first end wall of the piston in permanent contact with the surrounding fluid, and wherein the pressure means comprises at least two sources of different pressures, the pressure of the first source being that of the surrounding fluid and the pressure of the second source being lower than that of the first source.

4,253,540

STEERING SYSTEM FOR COLD ENVIRONMENTS

Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

This PCT application filed Oct. 29, 1979, Ser. No. 108,908
PCT No. PCT/US79/00920, § 371 Date Oct. 29, 1979, § 102(e) Date Oct. 29, 1979
Int. Cl.[3] B62D 5/06; F15B 11/16
U.S. Cl. 180—139 4 Claims



1. In a steering system (36) for a vehicle (10) having a pilot operated steering valve (42), a reservoir (40), a source (38) of fluid pressure in fluid communication with said steering valve (42); a hand metering unit (58) having a reservoir return port (82), a supply passage (76), first and second pilot fluid delivery ports (78)(80), and a make-up valve (84) interconnecting said return port (82) with said supply passage (76); first and second pilot lines (60)(62) connecting said first and second pilot fluid delivery ports (78)(80) to opposite ends of said steering valve (42), the improvement comprising:

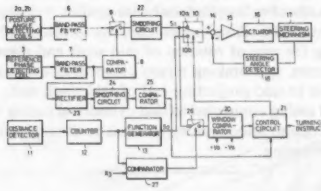
means (92) for maintaining a continuous fluid flow to each of said pilot lines (60)(62) at a first predetermined pressure level; and

a pressure responsive valve (90) in fluid communication between said reservoir (40) and said reservoir return port (82), said valve (90) being of a construction sufficient for passing fluid to said reservoir (40) in response to pressure of fluid at said return port (82) being at a second predetermined pressure level higher than said first predetermined pressure level.

4,253,541
STEERING CONTROL SYSTEM FOR AN UNMANNED VEHICLE

Katsuhiro Iida, Isehara; Takao Kamide, and Shinichi Hitomi, both of Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 4, 1978, Ser. No. 948,323
Claims priority, application Japan, Oct. 7, 1977, 52/120702
Int. Cl.[3] B62D *1/24*
U.S. Cl. 180—168 **11 Claims**



1. A steering control system for an unmanned vehicle wherein an unmanned vehicle is switched at an intersection of two guide cables from a guided travel by means of one of said two guide cables to a programmed turning along a preset path independent from said guide cables and subsequently switched to a guided travel by means of the other guide cable, said steering control system comprising:

programmed turning control means for sequentially reading a steering angle instruction value from a memory storing a preset path represented by a function of a travel distance and a steering angle during turning thereby to control a steering unit of the vehicle in response to the steering angle instruction value;

means for moving the vehicle straight ahead with a steering angle 0 until the vehicle reaches the other guide cable after completion of the programmed turning;

guided travelling control means including a vehicle posture angle detection means capable of detecting a posture angle of the vehicle in accordance with a magnetic field of the guide cables and controlling the steering unit of the vehicle in response to the detected posture angle;

detection means for detecting reaching of the vehicle to the other guide cable regardless of completion of the programmed turning; and

control means responsive to the output of said detection means for smoothly shifting the vehicle from the preceding travelling mode to the guided travel by means of said other guide cable.

4,253,542
EXHAUST SILENCER FOR EARTH MOVING MACHINES

Giacomo Ruspa, Turin, and Giancarlo Schellino, Mondovi, both of Italy, assignors to Centro Ricerche Fiat S.p.A., Turin, Italy

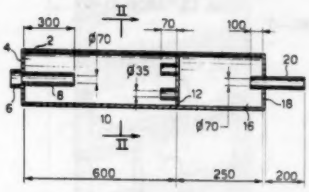
Filed Mar. 15, 1979, Ser. No. 20,788
Claims priority, application Italy, Mar. 16, 1978, 53061/78[U]
Int. Cl.[3] F01N *1/08*
U.S. Cl. 181—272 **1 Claim**

1. Exhaust muffler for an earth moving machine having an engine cylinder capacity of about 10 liters and a maximum power of about 150–160 HP, with natural air induction, comprising a body having an external cylindrical wall and first and second end walls closing opposite ends of the cylindrical wall, wherein:

the muffler body has an internal partition which subdivides the interior of said body into first and second expansion chambers having internal diameters of 250 millimeters, said partition being spaced 600 millimeters from said first end wall and 250 millimeters from said second end wall;

four tube sections are supported by said partition in alignment with apertures therethrough and project only into said first chamber, said tube sections having an internal diameter of 35 millimeters, and being arranged with their axes spaced apart angularly at 90° intervals on a circle of 160 millimeters diameter, each said tube section projecting for a length of 70 millimeters from the partition into said first chamber,

said first end wall is provided with a central inlet tube



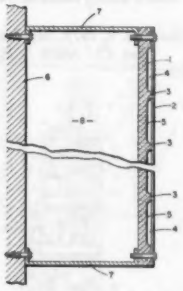
thereon having an internal diameter of 70 millimeters which extends for a length of 300 millimeters into said first chamber and

said second end wall has a central outlet tube therein having an internal diameter of 70 millimeters and extending for a length of 100 millimeters into said second chamber, said outlet tube projecting from said second end wall externally of the muffler body for a length of 200 millimeters.

4,253,543
DEVICE FOR ABSORPTION OF AIRBORNE SOUND

Bengt R. Johansson, Sollentuna, Sweden, assignor to Antiphon AB, Sundbyberg, Sweden

Continuation of Ser. No. 832,477, Sep. 12, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,860
Claims priority, application Sweden, Oct. 12, 1976, 7611288
Int. Cl.[3] E04B *1/82*; B32B *3/00, 3/26*
U.S. Cl. 181—286 **10 Claims**



1. An acoustical insulating device comprising a rigid, air permeable and self-supporting carrying layer and a flexible, air impermeable membrane applied thereto, said carrying layer having front and back sides, an air flow resistance of less than 10,000 Pas/m and a thickness of 1–60 mm, at least one surface of said carrying layer having a relief pattern comprising raised and lower parts, the depth of the relief pattern being 0.05 to 20 mm, said flexible membrane having a surface weight of less than 2 kg/m^2, means attaching said flexible membrane to said raised parts with an air gap of 0.05 to 20 mm between said flexible membrane and said lower parts, said device having support means for supporting said self-supporting carrying layer in spaced relation with a sound reflecting surface whereby an air gap of 5 to 100 mm between the back side of the carrying layer and said sound reflecting surface is provided

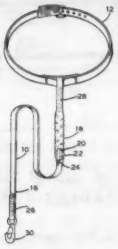
for increasing the damping of acoustic energy transmitted by the carrying layer.

4,253,544

ENERGY ABSORBING LANYARD

George C. Dalmaso, Polk, Pa., assignor to Inco Safety Products Company, Franklin, Pa.

Filed Feb. 11, 1980, Ser. No. 120,207
Int. Cl.[3] A62B *35/00*
U.S. Cl. 182—3 **11 Claims**



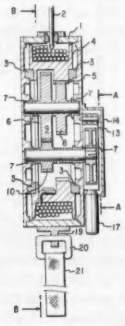
1. An energy absorbing lanyard, the lanyard comprising a tensile load bearing core having a predetermined tensile yield strength, a tube jacket affixed to and circumscribing the core, an indicator flag affixed to the jacket, and means for freeing at least a portion of the flag from the jacket when the lanyard is subjected to a tensile load above a predetermined value.

4,253,545

ESCAPE DEVICE FOR USE IN MULTISTORIED BUILDINGS

Makoto Yui, 509, 18, 2, Uzugamoridai, Higashinada-ku, Kobe city, Hyogo; Katsuyuki Sadakane, 403, 33, 8 Chaenba-cho, Akashi city, Hyogo, and Hidemasa Okazaki, 4765-55, Chaenba, Najio, Shiose-cho, Nishinomiya-city, Hyogo, all of Japan

Filed Jan. 9, 1979, Ser. No. 2,081
Int. Cl.[3] A62B *1/08*
U.S. Cl. 182—240 **2 Claims**



1. An escape device for use in multistoried buildings, comprising:

a hollow cylindrical casing having opposed side walls spaced apart by a cylindrical wall in which is provided a feedthrough hole;

an escapee-supporting member attached externally to said cylindrical casing;

a drum rotatably supported within said cylindrical casing by said cylindrical casing side walls by means of bush members disposed on said side walls, said drum having an internal gear on the inner peripheral surface thereof;

an escape wire wound around the outer peripheral surface of said drum, said wire having one end connected to said drum and the other end fed through said feed-through hole in the cylindrical wall of said cylindrical casing;

a reduction gear unit comprising at least two gears positioned within said drum and within said cylindrical casing and supported in bearings fitted on said casing side walls, one of said at least two gears in mesh engagement with said internal drum gear, the other of said at least two gears mounted on a shaft projecting outwardly from one of the side walls of said cylindrical casing;

single rotation braking means coupled to said shaft for reducing the rate of rotation of said shaft and therefore of said drum, said braking means comprising a disc member secured to said projecting end of said shaft; and,

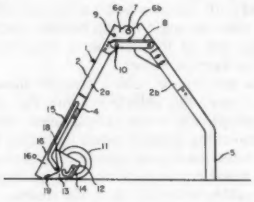
a second casing connected to said cylindrical casing wherein said single rotation braking means is positioned within said second casing.

4,253,546

HAND TRUCK

Taichi Uchida, 29 Kamibetto-cho, Kitashirakawa, Sakyo-ku, Kyoto-shi, Kyoto-fu, Japan

Filed Mar. 20, 1979, Ser. No. 22,231
Claims priority, application Japan, May 15, 1978, 53/65385[U]; May 15, 1978, 53/65386[U]
Int. Cl.[3] B62B *1/12*
U.S. Cl. 182—20 **20 Claims**



1. A hand truck comprising a frame having longitudinally extending and transversely spaced side members, wheels rotatably mounted at one end of said frame, handle means at the other end of said frame, a load support member, and mounting means on said side members for mounting said load support member at selected longitudinally spaced locations of said frame, said mounting means comprising bracket supports which are operable to engage and mount said load support member so that the latter extends generally perpendicularly from said side members such that when the hand truck is disposed in a substantially upright position, loads may be carried on the hand truck at different elevations as determined by the selected location on which said load support member is mounted on said bracket supports.

4,253,547

PORTABLE PERSONNEL PLATFORM AND LADDER

Clifford I. Skaalen, Oxnard, and Arthur B. Rausch, Port Hueneme, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 134,833
Int. Cl.[3] E06C *1/393, 1/56*
U.S. Cl. 182—115 **11 Claims**

1. A portable personnel platform and ladder assembly for use on decks of piers, docks and ships, comprising:

a. a ladder supporting platform means operable to extend over the edge of a deck;

b. said ladder supporting platform means having a forward

and a rearward edge, two opposite side members and a flat platform section mounted therebetween;

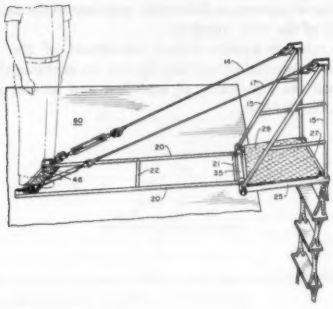
c. a compression framework having one end thereof pivotally attached to the forward edge of said ladder supporting framework means;

d. said ladder supporting platform means being operable to be folded over said compression framework where pivotally attached thereto;

e. ladder attachment means mounted on said ladder supporting platform means toward the rearward edge thereof;

f. ladder means connected to said ladder attachment means and extending downward therefrom;

g. respective railing sections mounted on and extending upward from opposite sides of said ladder supporting means;



h. a pair of backstay means between the tops of said respective railing sections and the opposite end of said compression framework on respective side thereof; said backstay means being operable together with said compression framework and said railing sections to form trusses which develop cantilever strength; the length of said trusses being varied by changing the length of said compression framework;

i. means at the opposite end of said compression framework for applying a holding force which together with the length of said trusses is operable to create sufficient leverage to support a downward force on said ladder means and said ladder supporting platform means at least several times greater than said holding force.

4,253,548

FOLDING SCAFFOLD SYSTEM

Gregory L. Beeche, R.D. #2, Smith Rd., Mechanicville, N.Y. 12118

Filed Oct. 31, 1979, Ser. No. 90,017
Int. Cl.[3] E04G *3/10*
U.S. Cl. 182—142 **20 Claims**

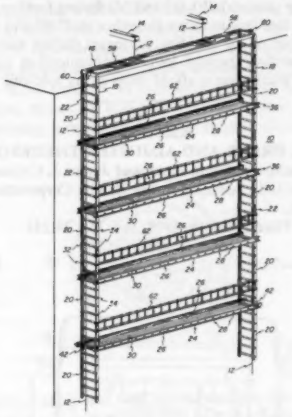
1. A scaffold system to be suspended on a pair of cables extending downwardly from a pair of suspension points through the space to be scaffolded comprising:

an end support beam extending substantially horizontally between the cables;

means attached to the beam for gripping each cable and selectively moving the beam upwardly and downwardly thereon;

a chain of end support sections foldably linked to each end of the support beam so as to hang downwardly therefrom, each chain having a plurality of end support sections therein foldably linked together in an end to end relationship;

a plurality of work platforms extending substantially horizontally between the chains of end support sections and movable vertically independently of said chains; and



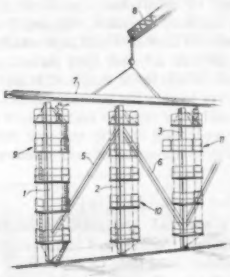
first means for selectively and individually connecting each work platform to each chain and cable at selected levels thereon.

4,253,549

METHOD AND A SYSTEM FOR THE ERECTION OF HIGH BUILDINGS

Rolf A. M. Petren, Jerkholmen 609, Hovas, Sweden

Filed Oct. 25, 1978, Ser. No. 954,641
Claims priority, application Sweden, Nov. 15, 1977, 7712904
Int. Cl.[3] E04G *3/00*
U.S. Cl. 182—150 **8 Claims**



1. In a method of erection of a high building, or the like, having a plurality of superimposed floor levels, and a plurality of vertically extending columns (1, 2, 3) located at horizontally spaced locations, and using a scaffold,

the steps of:

(a) placing a base scaffold unit of at least two floor heights and having interconnected platforms along one column, said base scaffold unit being accessible from the ground;

(b) extending the height of the scaffold along said one column by adding a sequential scaffold unit on said base scaffold unit, as the height of the column is increased during construction of the building;

(c) placing a further scaffold unit of at least two floor level heights and having interconnected superimposed platforms along another column;

(d) securing the uppermost platform of the further scaffold unit on the other column;

(e) then, as the height of the other column is increased during construction of the building, hoisting said further scaffold unit up the other column;

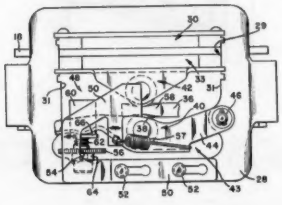
and repeating steps (a), (b), (e) and (d) during further construction of the building to move the other scaffold unit upwardly as the height of the building increases during construction, while providing ground level communication via the sequentially increasing scaffold units along said one column.

4,253,550

DISC BRAKE AND ADJUSTER THEREFOR

John T. Kasselmann, South Bend, and James J. Colpaert, Granger, both of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 26, 1979, Ser. No. 24,232
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—71.9 **11 Claims**



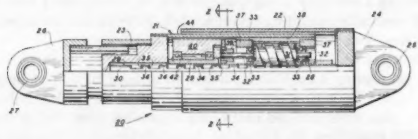
1. In an adjuster for a disc brake assembly having a frame movably disposed relative to a rotor and cooperating with a pair of friction elements to urge the latter into engagement with the rotor, the frame including a central opening to receive the friction elements and an actuator is disposed substantially within the central opening, the actuator being operable to cause the pair of friction elements to move into engagement with the rotor, and the adjuster being responsive to wear of the friction elements to substantially maintain a predetermined running clearance with the rotor, the improvement wherein said adjuster includes a lever which is pivotally secured at one end to the frame, said adjuster also including an extendible assembly carried on said lever at the other end which cooperates with said lever to vary the position of said lever relative to the frame, and said lever opposes said actuator at an intermediate position between said ends to transmit movement to said frame in response to operation of said actuator.

4,253,551

MECHANICAL SNUBBER ASSEMBLY

Richard A. Calabrese, Newtown, Conn., assignor to Anchor/-Darling Industries, Inc., Bala Cynwyd, Pa.

Filed Apr. 17, 1978, Ser. No. 897,102
Int. Cl.³ B60T *7/12*
U.S. Cl. 188—134 **11 Claims**



1. A mechanical snubber comprising:

(A) a housing incorporating

(a) a first portion,

(b) a second portion slidably engaged with the first portion, and

(c) mounting means secured at the ends of both the first and second portions for mounting one of said portions to a first support and for mounting the other of said portions to a second support;

(B) a longitudinally extending rack member having a longitudinally extending axis therethrough

(a) incorporating a plurality of transversely extending drive teeth axially arrayed along the rack member,

(b) fixedly mounted at one end thereof to the first portion of the housing, and

(c) positioned for axial translation in response to relative movement between the first portion and the second portion of the housing;

(C) a worm

(a) rotationally mounted in the second portion of the housing and having an axis substantially parallel to and spaced from the longitudinally-extending rack member's axis, and

(b) controllably engaged with the rack member for induced rotational movement thereof in response to the axial translation of the rack member,

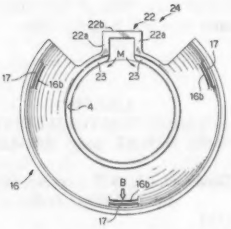
whereby relative axially sliding movement of the housing portions is converted into rotary motion for enabling the snubber to limit the movement of said first and second portions relative to each other.

4,253,552

ANTI-RUST COVER FOR A DISC ROTOR OF A VEHICLE DISC BRAKE

Juichi Shibatani; Kenichi Nakamura; Wataru Izuhara, and Yuichiro Obu, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 25, 1979, Ser. No. 51,752
Claims priority, application Japan, Dec. 26, 1978, 53-178685[U]; Mar. 7, 1979, 54-28965[U]
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—218 A **10 Claims**



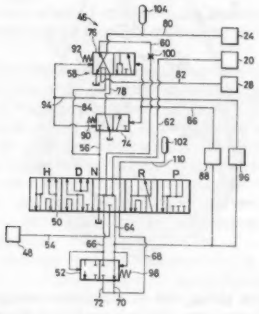
1. In an anti-rusting arrangement for a disc rotor of a vehicle disc brake including a disc rotor integrally rotatable with a wheel, a dust cover covering the inner side of said disc rotor, and an anti-rust cover covering the outer side of said disc rotor, which anti-rust cover is retained by being removably attached to the outer periphery of said dust cover, an improvement of said anti-rust cover characterized in that the same comprises a hat portion of generally truncated cone shape and a bridge portion of arcuate configuration formed by partly narrowing the width of said hat portion, said bridge portion being provided with a detoured path portion protruding outwardly therefrom for encircling an open space in it.

4,253,553

CONTROL APPARATUS FOR AN OIL PRESSURE OPERATED TRANSMISSION IN AUTOMOTIVE VEHICLE

Yoji Yamada, Kawagoe; Sadanori Nishimura, Omiya; Takeyuki Shimizu, Kamifukuoka, and Masakazu Maezono, Omiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,304
Claims priority, application Japan, Sep. 14, 1978, 53-112179
Int. Cl.³ F16D *25/10*; B60K *41/16*
U.S. Cl. 192—3.62 **5 Claims**



1. A control apparatus for an oil pressure operated transmission in automotive vehicle, comprising:

(a) an oil pressure source;

(b) a plurality of oil pressure passages comprising a first oil passage, a second oil passage, a third oil passage and a fourth oil passage;

(c) at least low speed and high speed forward driving trains;

(d) low speed and high speed oil pressure clutches interposed in said low speed and high speed forward driving trains;

(e) shift valve means for supplying the pressure oil selectively to said oil pressure clutches; and

(f) a manual valve operable in a plurality of ranges comprising a hold range H, an automatic shift range D, a neutral range N, a reverse range R and a parking range P;

said manual valve connected through said first oil passage to said oil pressure source,

said manual valve interposed between said low speed oil pressure clutch and shift valve means for dividing the oil passage into said third oil passage on its upstream side and said fourth oil passage on its downstream side,

wherein, in said automatic shift range D of the manual valve, said low speed and high speed oil pressure clutches are selectively supplied with pressure oil through the shift valve means connected through said second oil passage to said manual valve, and wherein, in said hold range of the manual valve, the communication between said third oil passage and said fourth oil passage is disrupted, said fourth oil passage is in communication with said first oil passage without through said shift valve means, and at the same time the communication between said first oil passage and said second oil passage is disrupted.

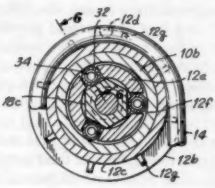
4,253,554

BI-DIRECTIONAL CLUTCH

Jules Nisenson, New York, N.Y., assignor to Nisenson Technology Corp., New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,903
Int. Cl.³ F16D *67/02*
U.S. Cl. 192—8 R **3 Claims**

1. A bi-directional clutch comprising a first member having a planar section and a circumferential wall upstanding therefrom; a second member having a planar section and a cylindrical wall upstanding therefrom, said cylindrical wall being provided with a bore and radial slots; said cylindrical wall of said second member being positioned within said circumferential wall of said first member; a plurality of hollow cylindrical rollers positioned within said slots and having opposite ends adjacent to said planar sections of said first and second members; a third member positioned within the bore of said cylindrical wall of said second member and having a section with a plurality of flat surfaces, at least some of which are adjacent to said rollers; means for applying a torque to said second member for turning it in either direction relative to said first member, a torque applied to said second member in either direction causing said rollers to turn with said second member and to bear against respective flat surfaces of said third member to turn said third member with said second member, a torque applied to said third member in either direction causing said flat surfaces to wedge said rollers against said circumferential wall of said first member thereby preventing turning of said third member; and spring means in each of said hollow cylindrical rollers for bearing at opposite ends against the respective planar sections of said first and second members.

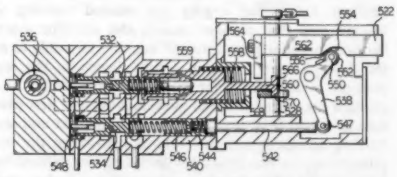


4,253,555

VEHICLE STEERING BRAKE AND CLUTCH CONTROL

Gary A. Hakes, North Brunswick, N.J.; Norma G. Shook, Morton; George W. Cackley, Hanna City, both of Ill.; Stephen D. Burdette, Edina, Minn., and Hugh C. Morris, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 876,581, Feb. 9, 1978. This application Apr. 16, 1979, Ser. No. 29,982
Int. Cl.³ F16D *67/04*; B60K *29/00*
U.S. Cl. 192—13 R **6 Claims**



1. In a vehicle in which driving force is applied to both sides thereof, including clutch and brake systems associated respectively with both sides thereof and responsive to fluid pressure from a source thereof for steering of the vehicle, each clutch and brake system associated with a side of the vehicle comprising clutch means disengagable to disconnect the driving force applied to that side of the vehicle and engagable to connect the driving force to that side of the vehicle and brake means actuatable to brake that side of the vehicle, and releasable to release that side of the vehicle, a control apparatus for each clutch and brake system comprising:

a valve comprising a valve body defining a bore, and first and second valving spools movably disposed within and along said bore;

first means for providing fluid communication between said source and said valve body bore;

second means for providing fluid communication between said valve body bore and said clutch means;

third means for providing fluid communication between said valve body bore and said brake means;

fourth means for providing fluid communication from said valve body bore and through which fluid pressure may be released from said valve body bore;

the first valving spool being movable within said bore to first and second positions relative to said valve body, the first valving spool in one of said first and second positions allowing release of fluid pressure from said clutch means through said second fluid communication means and said fourth fluid communication means, the first valving spool in the other of said first and second positions providing communication of fluid pressure from said source through said first fluid communication means, through said second fluid communicaton means, to the clutch means;

the second valving spool being movable within said bore to first and second positions relative to said valve body, the second valving spool in one of said first and second positions providing communication of fluid pressure from said source through said first fluid communication means, through said third fluid communication means, to said brake means, the second valving spool in the other of said first and second positions allowing release of fluid pressure from said brake means through said third fluid communication means, and said fourth fluid communication means; and

actuator means operatively coupled with said first and second valving spools so that movement of said actuator means in one direction provides movement of the first and second valving spools to their respective first positions, and movement of the actuator means in another direction provides movement of said first and second valving spools to their respective second positions,

wherein said actuator assembly comprises first plunger means movable along said bore defined by said valve body, second plunger means adjacent said first plunger means and movable relative thereto along said bore defined by the valve body, resilient means for urging the first and second plunger means relatively apart, third plunger means movable relative to the first and second plunger means along said bore defined by the valve body, means operatively connecting the first plunger means with the second valving spool, means operatively connecting the third plunger means with the first valving spool, the apparatus further comprising resilient means for urging the first valving spool toward said third plunger means and resilient means for urging the second valving spool toward said first plunger means, the actuator assembly further comprising an actuator member movable to move the first plunger means in a first direction, the second plunger means being movable generally with the first plunger means upon initial movement of the first plunger means in said first direction to move the first and second valving spools in said first direction to bring the second plunger means into contact with a shoulder defined by the valve body, whereupon compression of the resilient means urging the first and second plunger means relatively apart takes place upon further movement of the first plunger means in said first direction.

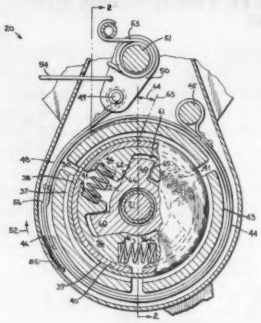
4,253,556

CLUTCH-BRAKE MECHANISM

Hugh A. Zindler, Rte. #3, Pleasant Valley La., Watertown, Wis. 53094

Filed May 3, 1979, Ser. No. 35,683
Int. Cl.³ F16D *43/20, 67/02, 43/24, 13/71*
U.S. Cl. 192—17 R **25 Claims**

1. In a clutch-brake mechanism for disposition between coaxial drive and driven members rotatable in a given direction, a drum carried on said drive member, a clutch shoe disposed between the driven member and the drive drum and being movable radially and circumferentially therebetween into and out of clutching engagement with the drum, a projection on said driven member and extending into a corresponding recess provided in said shoe, a cam ramp provided on the trailing side of the projection and being engageable by the shoe, the radially outermost end of the cam ramp being angularly advanced relative to the radially innermost end thereof, means for effecting movement of the shoe generally radially toward engagement with the rotating drum, and upon contact with the drum, said shoe being forced circumferentially into contact with the cam ramp, the load imposed on and by the



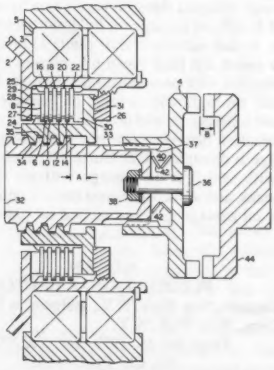
driven member giving rise to a reactive energizing force to effect movement of the shoe outwardly on the cam ramp and into clutching engagement with the rotating drum to rotationally pick up the driven member, a braking surface on the clutch shoe, and a brake band member movable between an expanded condition wherein the brake band is spaced outwardly from the shoe and a contracted condition wherein the brake band engages the braking surface on the shoe to displace the shoe inwardly out of clutching engagement with the drum and to stop rotation of the driven member without interrupting the rotation of the drive member.

4,253,557

VARIABLE LOAD CLUTCH APPARATUS

Dennen J. Bunger, Clinton, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed May 23, 1979, Ser. No. 41,676
Int. Cl.³ F16D *43/21, 15/06*
U.S. Cl. 192—54 **7 Claims**



1. Variable load clutch apparatus for coupling a driving member and a driven member, comprising:

clutch means including a plurality of clutch discs;

a clutch member arranged in spaced relation to the driving

member, with the clutch discs captured in the space between the clutch member and the driving member,

the driving member including a flange having at least an inner surface;

the clutch member including a flange having an inner surface and an outer surface;

the inner surfaces of the flanges being in spaced relation;

means coupled to the clutch member and carrying the driven member, with said means and clutch member being displaceable relative to each other;

a first spacer adjacent the inner surface of the driving member flange;

a second spacer adjacent the inner surface of the clutch member flange;

the clutch discs mounted to the driving member and to the clutch member and captured between the first and second spacers;

loading means displaceably arranged relative to the clutch member adjacent the outer surface of the clutch member flange and displaceable relative thereto for applying a light preload to the clutch discs captured in the space between the clutch member and the driving member to transmit a torque so that the means coupled to the clutch member and carrying the driven member is displaced relative to the clutch member until the driven member experiences an impact torque, whereupon the clutch means slips; and

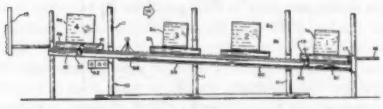
the clutch member being responsive to the transmitted torque and the impact torque for being displaced relative to the means coupled thereto in a sense to increase the load on the clutch discs which increases the torque transmitting capability of the clutch means.

4,253,558

CONVEYOR SYSTEM

Richard S. Roeing, and Richard A. Defoe, both of Sterling, Ill., assignors to Mallard Manufacturing Corporation, Sterling, Ill.

Filed Apr. 13, 1978, Ser. No. 895,970
Int. Cl.³ F16B *63/00*
U.S. Cl. 193—35 A **14 Claims**



1. A conveyor system comprising a channel having sides and a bottom, a plurality of cylindrical rolls extending transversely of said channel and axially mounted in said sides to provide a track at the top of said rolls along which articles may move, a top plate within said channel under said rolls, spring means for pressing said plate upwardly of said channel and against said rolls to thereby produce a braking action tending to restrict rotary movement of said rolls, and means for urging said plate downwardly counter to the pressure of said spring means to thereby reduce said braking action.

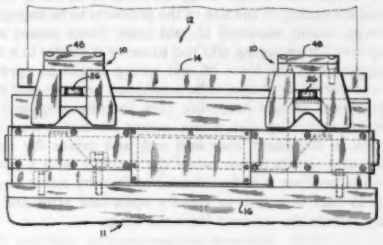
4,253,559

PALLET LOCATING AND CLAMPING MECHANISM FOR A TRANSFER MACHINE

Douglas Myers, Sterling Heights, and John Vandenkieboom, Troy, both of Mich., assignors to LaSalle Machine Tool, Inc., Troy, Mich.

Filed Jan. 8, 1979, Ser. No. 1,729
Int. Cl.³ B65G *21/20*
U.S. Cl. 198—345 **2 Claims**

1. In transfer apparatus for advancing work support members to a work station, means for clamping a work support member at a predetermined position at said work station comprising a reciprocally movable clamping member at said work station, a first drive member operable to actuate said clamping member, coacting cam means on said clamping member and on said first drive member for transmitting the movement of said first drive member to said clamping member, a second drive member for moving said first drive member in a direction to cause said clamping member to engage a work support member at said work station, means enabling a predetermined



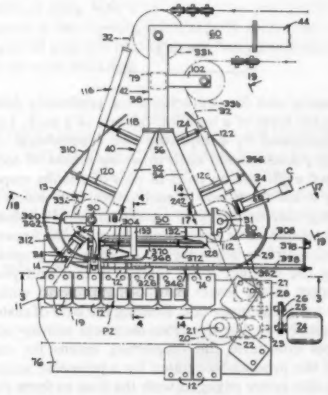
amount of relative movement between said drive members, abutment means acting between said drive members to transmit the movement of said second drive member to said first drive member, and spring means acting between said drive members to constrain relative movement between said drive members when said clamping means is actuated, said spring means being substantially enclosed in said drive members so as to be essentially free from foreign matter.

4,253,560

TRANSFER CONVEYOR FOR FROZEN CONFECTIONS

Stephen D. Cross, Fremont, Calif.; Wilber C. Belk, Lakeland, Fla.; Elmer F. Frost, Jr., Lakeland, Fla., and William M. Easter, Lakeland, Fla., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 4, 1979, Ser. No. 45,040
Int. Cl.³ B65G *29/00*
U.S. Cl. 198—479 **18 Claims**



1. A conveyor adapted to remove products such as frozen confections from a pickup area and to deliver the products to a receiving area comprising main frame means, endless conveyor means supported on said main frame means, a plurality of carriages mounted in series upon said conveyor means, each carriage comprising a carriage frame, a pair of arms pivotally mounted for scissoring movement to said carriage frame at their inner ends, spring means normally urging said arms

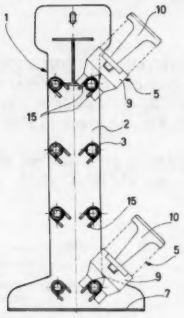
toward each other into a closed position, tongs fastened to the outer ends of said arms, said tongs having means for engaging the product to be transferred when said arms are scissored together, a rod, a wedge mounted to said rod and engageable with the inner opposed sides of said arms, means for slidably mounting said rod with said wedge attached thereto for axial reciprocation along an axis intermediate said arms, a stop adjustably mounted upon the carriage frame for stopping the movement of said wedge under the pressure of said spring means so that said wedge holds the arms at an initial spacing selected according to the size of the products to be engaged by the tongs, means mounted to said main frame means at the pickup area for engaging said rod to move it axially in a direction opposed to the force of said spring means to open said arms and permit a product to be positioned between said tongs, striker means at said receiving area for engaging said rod, means for mounting said striker means for linear travel in a direction in alignment with said rod, and means for rapidly moving said striker means when the carriage is in a position where the product is to be released to thereby move said rod axially in said direction to rapidly open said arms and thus quickly release the product from the tongs.

4,253,561

DISPLAY UNIT FOR CONFECTIONERIES

Enrique B. Fontlladosa, 184, Paris St., Barcelona, Spain

Filed Aug. 9, 1979, Ser. No. 65,046
Claims priority, application Spain, Apr. 18, 1979, 243,169
Int. Cl.³ B65D *5/50*
U.S. Cl. 206—44 R **1 Claim**



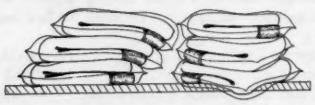
1. A display unit for confectioneries, preferably destined to candies in the form of a lump on the end of a stick, i.e. a lollipop, characterised by comprising two symmetrical elements integrating planes related each other by means of crossmembers formed each one by pairs of pins or shanks respectively belonging to the inner side of each lateral and which pins are coupled together coaxially in a tongued way; as planes integrating the display unit are getting larger on the upper part to form a large surface allowing the insertion of graphicals for identifying the product to be shown; in that said planes are getting larger at the lower part, being providd with a bent portion towards the inner side, forming the base of sustentation of the assembly; in that the cross-members relating solidarily both planes constitute the supporting means for container devices of the product integrated by a prismatic shaped base and a fork-like cover engaged with the base to form the packaging of the product; in that the cited base shows some projections in the way of a pyramide truncated by a prism receiving the end of the stick, self-centering the product to be exposed; in that said base disposes of two lateral orifices to engage into some harpoon recesses of the cover remaining the product located between the base and the cover; in that the container device as described is used for transporting the product, being possible to engage it with the display unit at the exposition point by means of adjustment of the projections of the base with the cross-members which present end planes positioning the containers automatically into the inclined position of an identical ngle.

4,253,562

DISPLAY PACKAGING FOR SOFT MERCHANDISE

John D. Vandenberg, 31 Mount Joy Ave., Scarsdale, N.Y. 10583, and Leonard B. Vandenberg, 710 Sanders Ave., Scotia, N.Y. 12302

Filed Jul. 23, 1979, Ser. No. 39,517
Int. Cl.³ B65D *27/00, 65/16, 85/62*
U.S. Cl. 206—45.33 **2 Claims**



1. A display package for merchandise including a transparent envelope of single-thickness material for containment protection, and display of merchandise.

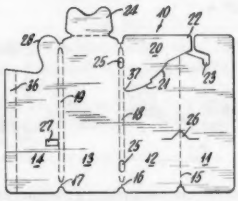
said envelope including a plurality of friction protuberances on the exterior surface thereof to provide corresponding local areas of pressure and friction whereby lateral slippage of one such package, when stacked on another, is impeded.

4,253,563

MULTISTRAND SUTURE PACKAGE

Peter Komarnycky, Highbridge, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed May 15, 1980, Ser. No. 150,266
Int. Cl.³ A61L *15/00*
U.S. Cl. 206—63.3 **16 Claims**



1. An elongated, folded retainer for a plurality of surgical sutures comprising

first and second needle retaining panels foldably connected along one major edge thereof, and

third and fourth suture retaining panels foldably connected along one major edge thereof,

said second needle retaining panel being further foldably connected to said third suture retaining panel along the other major edge thereof

said second needle retaining panel having a tab extending beyond the foldline between the first and second needle retaining panels and a die cut extending diagonally toward the center and across the width of said panel from said tab to the foldline between said second and third panels to form a removable panel portion,

said first needle retaining panel having a central opening and a slot extending from said opening to an outside edge of said panel, said central opening being positioned to underlie said removable panel portion of said second panel when said first and second panels are folded together, and

said fourth panel having an upper edge contoured to avoid

overlapping said central opening of said first panel when said retainer is in its folded configuration,

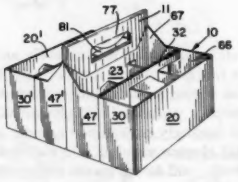
said retainer when folded with said first and fourth panels enclosed between said second and third panels, forming an internal cavity between the third and fourth panels adapted to contain a plurality of surgical sutures coiled therein with one end of said sutures extending from said cavity through said central opening in the first panel to a point underlying said removable panel portion of said second panel.

4,253,564

BOTTLE CARRIER

Arnold B. Engdahl, Jr., Irvin, Calif., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed May 21, 1979, Ser. No. 40,727
Int. Cl.³ B65D *85/40*
U.S. Cl. 206—183 **10 Claims**



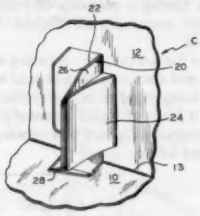
1. An upwardly opening tray-like carrier carton for packaging a plurality of articles having the general form of beverage bottles said carton being formed from a single elongate blank of foldable sheet material which is cut and scored so as to divide it into a series of integrally connected panels which may be folded and secured together to form the carton, said carton comprising a double row of upwardly opening article receiving cells disposed on opposite sides of a central article separating partition and handle forming structure, which central partition and handle structure comprises a pair of full depth panels disposed in back to back relation which are hingedly connected to each other at the top edges thereof and hingedly connected at opposite ends to a reinforcing handle panel and a handle cover panel, said handle reinforcing and cover panels being folded down along said top edge and secured to the opposite outer faces of the handle forming top portions of said pair of full depth panels, said central partition and handle structure being hingedly connected at its opposite ends to vertical edges of a pair of hingedly connected foldable end wall forming panels each of which constitutes the inboard one of a pair of end wall forming panels at the end of each double row of article receiving cells, the outermost vertical edge of the outboard one of said end wall forming panels at the ends of said cells being hinged to the end edge of a vertical sidewall forming panel, each said sidewall panel being hingedly connected to the outboard edge of a foldable bottom wall panel which has its opposite edge hingedly connected to the bottom edge of said central partition and handle structure and the cells in each of said double row of cells being defined in part by an upstanding partition wall which extends between the rows and which is hinged at its opposite ends to adjoining vertical edges of said pairs of end wall forming panels at the ends of said cells so as to enable the cells on each side of said central partition and separating wall structure to be collapsed when empty and to be folded into flattened relation against said central separating partition and handle forming structure.

4,253,565

CARRIER PARTITION ARRANGEMENT

Francis A. Chidsey, Jr., Devon, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 17, 1980, Ser. No. 112,949
Int. Cl.³ B65D *85/30, 5/48*
U.S. Cl. 206—190 **4 Claims**



1. A partition arrangement for a carrier carton formed of foldable sheet material, such as paperboard or the like, for enclosing a plurality of bottles disposed in side-by-side relation, comprising;

(a) a bottom wall;

(b) at last one vertical wall foldably joined to and upstanding from said bottom wall;

(c) a partition structure formed from material of said vertical wall and said bottom wall, including:

(i) a first member having a vertical element foldably joined at an end edge to said vertical wall on a first fold line, and a horizontal element foldably joined at one edge to said bottom wall, foldably joined at another edge to a lower edge of said vertical element, and disposed in face-to-face relation with said bottom wall;

(ii) a second member foldably joined at an end edge to said vertical wall on a second fold line located parallel to but spaced laterally from said first fold line;

(iii) said second member being formed from material of said first member and other material of said vertical wall;

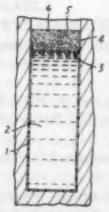
(iv) said members being folded out of the plane of said vertical wall with their respective end portions positioned in face-to-face relation with each other between a pair of adjacent bottles to provide a partition structure of two-ply thickness.

4,253,566

RESIN-CONTAINING CARTRIDGES AND PROCESS FOR SEALING SOLID STRUCTURES OR FOR ANCHORING BOLTS AND RODS THEREIN

Ronald W. Seemann, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 16, 1979, Ser. No. 67,044
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—220 **5 Claims**



1. A cartridge containing at least two segregated compo-

nents of a multi-component curable resin system, which cartridge comprises:

(a) a generally cylindrical, rupturable container containing at least one component of a multi-component curable resin system;

(b) integral therewith, at one end of and in axial alignment with said generally cylindrical, rupturable container, a mixer comprising a liquid-permeable, three-dimensional matrix having a plurality of continuous flowpaths therethrough, essentially all of these flowpaths being non-linear; and

(c) means for selectively rupturing said rupturable container at the end thereof adjacent said mixer,

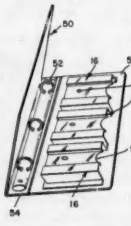
said mixer being rigid or compressible but not compressible to the extent it loses its liquid permeability under pressure sufficient to selectively rupture said rupturable container at the end adjacent said mixer.

4,253,567

CASSETTE CONTAINER

Arthur R. Goldammer, San Pedro, Calif., assignor to Pocket-Pak, Inc., Tulsa, Okla.

Filed Nov. 13, 1978, Ser. No. 959,708
Int. Cl.³ B65D *85/672*
U.S. Cl. 206—387 **13 Claims**



1. A container for holding a rectangular cassette, said cassette including a pair of wind or unwind gear openings located offset the central line of the length axis of said rectangular cassette, comprising:

a substantially flat bottom wall without indicia, identical side walls, a single end wall and a preformed top wall for accepting a cassette from an opened end wall whereby the cassette is held on said flat bottom wall,

said top wall having a center portion spaced a given distance from said bottom wall and a pair of end portions each spaced a greater distance from said bottom wall than said center portion, and at least one indentation located substantially on the center line of the center portion of said top wall,

said indentation projecting towards said bottom wall and having the general shape of an ellipse whereby said indentation is aligned with one of the openings of the wind or rewind gear of the cassette regardless of the position of the cassette on said flat bottom wall.

4,253,568

VIDEO CASSETTE CONTAINER

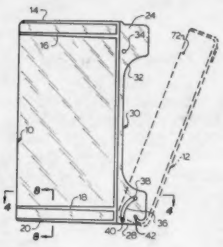
Jerry M. Long, Ben Lomond, and James A. Womack, Livermore, both of Calif., assignors to Innovative Concepts, Inc., Los Gatos, Calif.

Filed Jun. 1, 1979, Ser. No. 44,372
Int. Cl.³ B65D *85/672, 43/14*
U.S. Cl. 206—387 **7 Claims**

1. Container apparatus for video tape cassettes and the like comprising:

a generally rectangular container body having left, right, top, bottom and rear side walls and a front opening, said left, right and bottom side walls having portions extending outwardly of said opening, said outwardly extending left and right wall portions having an arcuate slot extending from the front lowermost edge rearwardly and upwardly, and the exterior side surfaces of said outwardly-extending portions having an arcuate groove formed therein and extending from a point proximate the lower extremity thereof upwardly and forwardly, said arcuate slots and said arcuate grooves having common radical center points; and

a generally rectangular closure member having front, left, right and top side walls and being open on the bottom and rear sides to receive said left, right and bottom side wall outwardly extending portions, the lower extremity of said



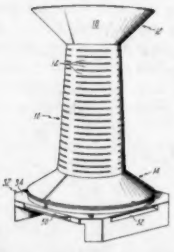
front wall being curled downwardly and rearwardly and having a radius of curl of substantially the same length as the radius of said arcuate slot, and detent means provided on the interior surface of said closure side walls and positioned to matingly engage said arcuate grooves, whereby when said closure member is in a closed position relative to said body, said detent means engage the lower extremities of said arcuate grooves, and the terminal edge of said curled extremity extends part way into said arcuate slots, and when rotated into an open position, said detent means engage the upper extremities of said arcuate grooves, and said curled extremity extends fully into said arcuate slots.

4,253,569

REINFORCED SPOOL FOR STORING AND TRANSPORTING STRAND MATERIAL AND A PACKAGE ASSEMBLY UTILIZING THE SAME

James A. O'Connor; Kenneth P. Kiefer, both of Fort Wayne, Ind., and Ralph A. Vogel, Three Rivers, Mich., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 13, 1979, Ser. No. 66,192
Int. Cl.³ B65D *19/04, 21/02, 85/675, 85/04*
U.S. Cl. 206—391 **4 Claims**



1. A spool for the shipping, storage and handling of wire and analogous strand material, comprising:

a unitary hollow shell having a substantially tubular barrel portion, a top flange and a bottom flange at the extremities of the barrel portion, said lower flange having a conical disc portion of substantially uniform thickness extending away from said barrel member and having a smooth frus-

to-conical surface .or bearing the weight of strand material wound about said barrel in a plurality of layers generally parallel to the exterior surface of said barrel member;

said spool having a support member including a planar base plate oriented substantially perpendicular to the axis of said spool, and hollow supporting legs formed substantially integrally with an depending from said conical disc portion at one side and said base plate at the other side to form a substantially unitary structure, said hollow legs being arranged to permit forklift transport of said spool; and

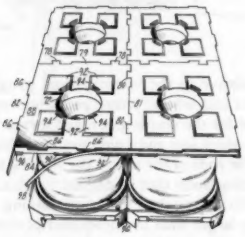
a cured foam filling occupying the interior of said hollow shell including said support member.

4,253,570

REINFORCED SPOOL FOR STORING AND TRANSPORTING STRAND MATERIAL AND A PACKAGE ASSEMBLY UTILIZING THE SAME

James A. O'Connor, and Kenneth P. Kiefer, both of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 13, 1979, Ser. No. 66,193
Int. Cl.[3] B65D *19/32, 19/44, 85/66*
U.S. Cl. 206—391 **3 Claims**



1. A package assembly for the shipping, storage and handling of wire and analogous strand material, comprising:

a plurality of spool devices each having upright longitudinally extending, tubular, central barrel member and upper and lower flange members carried by said barrel member at the extremities of said barrel member, said lower flange member having a conical disc portion of substantially uniform thickness extending away from said barrel member and having a smooth frusto-conical surface for bearing the weight of strand material wound about said barrel in a plurality of layers generally parallel to the exterior surface of said barrel member;

each said spool device having a support member including hollow supporting legs formed substantially integrally with said spool body as a substantially unitary structure to permit forklift transport of said spool device by itself and in combination with other similar spool devices;

said support member including locating means for locating adjacent spool devices relative to one another when included in ganged side-by-side relation in a package assembly, and a recessed banding groove in said support member for locating and retaining a flexible band encircling and banding together a plurality of spool devices in ganged relation as a package assembly for a single shipping unit;

a cap mounted as the upper flange of each spool device, each said cap including interlock means thereon cooperating with complimentary interlocking means as the cap of an adjacent spool device for preventing separation of adjacent spool devices when in ganged side-by-side relation in a package assembly;

means in the interior of said tubular central barrel member for diametically reinforcing said barrel member; and

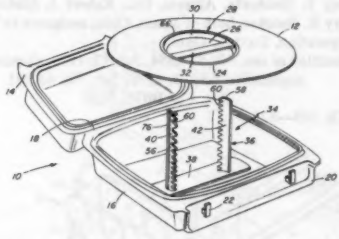
means in the interior of said support member for reinforcing said conical disc portion to permit the weight of said wire and analogous strand material to be transferred to said hollow supporting legs.

4,253,571

DISC CONTAINER

Richard J. Keohan, Braintree, Mass., assignor to Nashua Corporation, Nashua, N.H.

Filed Sep. 27, 1979, Ser. No. 79,466
Int. Cl.[3] B65D *85/30*
U.S. Cl. 206—444 **8 Claims**



1. An assembly for supporting, locating and stacking one or more discs in a spaced apart relationship comprising:

a horizontal base,

at least one vertical post rising from said base,

said post having an edge portion defining at least one substantially horizontally extending slot,

at least one spacer having a rim portion for supporting and positioning one of said discs, adapted to be rotatable about a vertical axis while supporting and positioning said disc,

said rim portion including a horizontally extending edge portion for rotatably, slidingly, horizontally engaging said post slot, and

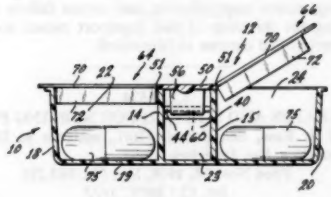
locking means for maintaining said spacer in a slot engaging position.

4,253,572

PLASTIC PILLBOX

Frank Halbich, Van Nuys, Calif.

Filed Apr. 30, 1979, Ser. No. 34,471
Int. Cl.[3] B65D *83/04, 85/56, 1/24, 1/36*
U.S. Cl. 206—538 **4 Claims**



1. A multi compartment container for pills and the like, the container being defined by side, end, and bottom walls of material, means defining partitions within the container defining a plurality of individual open top compartments each adapted to receive a product integral generally flat cover means configurated to fit onto the container, and to form a top closure for the individual compartments, said cover including a plurality of individual sections each shaped to provided a closure for an individual compartment and each section including a frangible part connecting it to the cover whereby each individual section can be broken free of the cover in order to open and uncover an individual compartment, the improvement comprising each of said sections and an individual com-

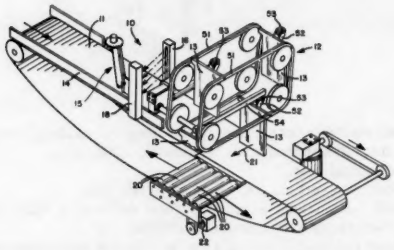
partment of the said container being mutually configurated whereby each of said sections has the capability of providing an air tight closure for an individual compartment, each of said sections including depending rib means formed on its underside and shaped to snugly fit into the open top of an individual compartment and to engage the side walls thereof to provide the air tight fit.

4,253,573

APPARATUS FOR HANDLING EMPTY BEVERAGE CONTAINERS

Gregory T. Dubberly, Atlanta, Ga.; Robert J. McGowan, and Larry R. Butcher, both of Xenia, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 924,854, Jul. 17, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 63,501
Int. Cl.³ B07C *5/10*
U.S. Cl. 209—525 **14 Claims**



1. Apparatus for handling empty beverage containers comprising a conveyor for receiving said containers individually and in cartons, alignment means for separating and aligning said containers and cartons, illumination means for illuminating said containers, sensing means for receiving illumination from said illuminating means, evaluation means responsive to said sensing means for generating a value signal corresponding to the return value of said containers, carton sensing means for sensing the presence of a carton on said conveyor, paddle means including a series of moving paddles responsive to said carton sensing means for pushing said cartons sidewardly off said conveyor and onto a separating station, carton failure means responsive to said carton sensing means for detecting an improperly filled carton and generating a carton failure signal, transport means positioned at said separating station for moving properly filled cartons forwardly to a storage area, and reversing means responsive to said carton failure signal for reversing the direction of said transport means and causing improperly filled cartons to be ejected.

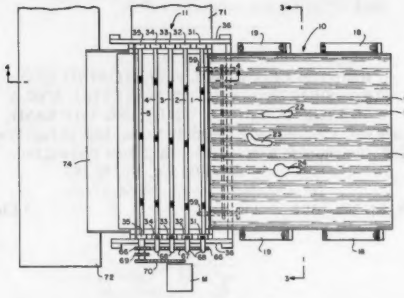
4,253,574

APPARATUS AND METHOD FOR SORTING PICKLES

Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.

Filed Nov. 24, 1978, Ser. No. 963,281
Int. Cl.³ B07C *5/12*
U.S. Cl. 209—668 **2 Claims**

1. Apparatus for sorting pickles that are sized as to length to separate pickles having an undesired configuration from those of a desired configuration, comprising means for conveying the pickles in the direction of their length, a series of spaced parallel horizontal rods having their axes extending laterally of the direction of movement of the conveyed pickles, the spacing between two adjacent rods being less than the length of the pickles of desired size and substantially greater than their diameter, means for driving the rods in one direction of rotation, the conveying means being disposed to deliver the pickles to the first one of the series of rods, the direction of rotation of the rods and the spacing between the same being such that pickles of desired configuration are advanced endwise from the conveyer to the upper surface of the first rod and then continously transversed endwise over all of the rods of the series and the spaces between the same, the ends of the rods, except for the first rod of the series, being journalled in and supported by arms, there being one pair of arms for each rod, means for pivotally supporting the arms whereby each pair of arms can be swung about a horizontal pivotal axis, means connected to said arms for simultaneously adjusting the angularity of each pair of arms relative to the vertical, the angular adjustment of the arms for the second and subsequent rods of



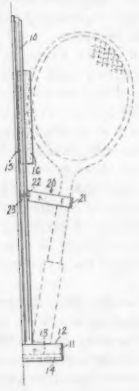
the series relative to the vertical being progressively greater for the series and whereby the spaces between adjacent rods remain equal for the entire series, and means for receiving the pickles of desired size and configuration which are conveyed over all of the rods of the series, the spacing between adjacent rods also being such that undesired pickles, including those that are seriously crooked and those having one end portion substantially larger than the other end portion, drop through the spacing, and means for separately receiving the pickles that drop between the rods.

4,253,575

RACK FOR TENNIS AND SIMILAR RACKETS

William Van Winkle, 41 Breezy Point, Little Silver, N.J. 07739

Filed Aug. 30, 1979, Ser. No. 71,299
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—13 **12 Claims**



1. A rack for supporting a racket-type game implement which has a flat, oval or rounded head portion, a straight elongated handle portion and a throat portion joining the head

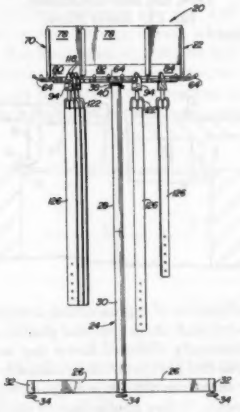
portion and the handle portion, the rack comprising an elongated narrow back panel adapted to be secured to a wall or the like in a generally vertical position, a base element fixed to the lower end portion of the back panel and presenting an upwardly facing support surface, a vertically elongated resilient compressible pad fixed to the upper portion of the back panel and a hook fixed to the back panel and extending from the surface thereof at a point below the pad, the hook including a portion which extends on a line substantially perpendicular to a plane which includes said hook portion and the longitudinal axis of the pad.

4,253,576

BELT FIXTURE AND METHOD OF USING SAME

Allan L. Ford, Melrose Park, and William A. Cole, Jenkintown, both of Pa., assignors to Reborn Products Co., Inc., Elkins Park, Pa.

Filed Dec. 5, 1977, Ser. No. 857,330
Int. Cl.[3] A47F 5/02
U.S. Cl. 211—60 R **16 Claims**



1. A belt rack comprising a plurality of sections, with each of said sections having indicia thereon, said indicia comprising a different color for each section, each section having a plurality of spokes thereon, a plurality of hang tags for suspending belts from the spokes, with each hang tag in a given section having the same color as the color indicium of said section, with said colors being used to distinguish the belts by style and a belt suspended by each hang tag.

4,253,577

GARMENT HANGER

Elmer P. Macfarlane, P.O. Box 139, Rogue River, Oreg. 97539

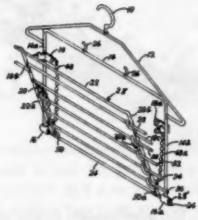
Filed Mar. 8, 1977, Ser. No. 775,610
Int. Cl.[3] A47F 5/01
U.S. Cl. 211—118 **1 Claim**

1. A portable, multiple garment carrier comprising, in combination,

(a) a rigid carrier frame which includes suspending means for detachably supporting the carrier frame from a hanger hook and laterally spaced side members that extend downward therefrom when the carrier frame is in suspended position,

(b) a rectangular rack frame for garments and other articles, having bearing means at its normally lower end through which it is pivotally supported from the lower part of said rigid carrier frame, and including a series of spaced, horizontally extending garment bearing rack bars, each affixed at one of its ends to the rack frame and normally releasably confined at its opposite end by a retaining hook affixed to the opposite end of the garment bearing rack frame, and

(c) flexible means of limited length connecting the fixedly supported carrier frame member to the garment bearing rack frame, the construction and arrangement being such that the rack frame can be swung down to a position in which the articles draped on the several individual bars of the rack frame are separated and hang clear of one another, and any selected garment bearing rack frame bar can be moved clear of its hook for permitting any article



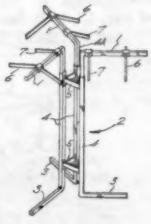
carried by it to be withdrawn lengthwise of the carrying rack frame bar, latching means being provided on the bearing frame for normally retaining the garment bearing rack in a substantially vertical position, the garment carrying rack being pivotally supported by the bearing frame in slots of the bearing frame that extend upward, the latching means including upwardly sloping hooks that terminate in retaining slots, and the rack including means that ride up the hooks and drop into the slots thereof as the rack is swung to its vertical position to be retained by the hooks.

4,253,578

MERCHANDISE DISPLAY RACK

John A. Rekow, 6130 SW. Taylors Ferry Rd., Portland, Oreg. 97219

Filed Apr. 16, 1979, Ser. No. 30,155
Int. Cl.[3] A47F 5/10
U.S. Cl. 211—208 **4 Claims**



1. A merchandise display rack comprising,

a base,

three support members supported by said base with the projected major axis of each support member offset from the rack center and intersecting a vertical plane containing a remaining support member, each support member having an inner minor segment and an outer major segment defined by the axis and plane intersection, the major segment of each support member disposed outwardly beyond the axis and plane intersection, and

arm members in place on the major segments of said support members and extending substantially laterally therefrom to receive merchandise to be displayed.

4,253,579

MODULAR BOOM CONSTRUCTION

Thomas R. Williams, Richfield, Minn., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Jun. 28, 1979, Ser. No. 53,138
Int. Cl.[3] B66C *23/62*
U.S. Cl. 52—655 6 Claims

1. In a boom, the combination comprising: a first longitudinally extending boom section having laterally spaced polyhedral subsections that are each formed of a set of longitudinal chords and cross lacings between the chords, an inner chord of one subsection being vertically aligned with an inner chord of another subsection;

a second longitudinally extending boom section having laterally spaced polyhedral subsections that are each formed of a set of longitudinal chords and cross lacings between the chords, an inner chord of one subsection of said second boom section being vertically aligned with an inner chord of another subsection of said second boom section;

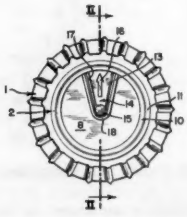
said first and second boom sections being joined to one another with an inner chord of a subsection on one side of the first boom section being connected to an inner chord of a subsection on the opposite side of the second boom section.

4,253,580

CONTAINER COVER WITH PEELABLE LINER

Koichi Doi, Inuyama; Fumio Mori, Yokohama; Isao Ichinose, Hirayama; Tetsuomi Ogimoto, Komaki, and Katsuhiko Kitakawa, Konan, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,308
Int. Cl.[3] B65D *53/04*
U.S. Cl. 215—228 10 Claims



1. A container closure for use in packaging flowable materials, comprising:

a closure shell;

a peelable thermoplastic olefin resin liner disposed on the inner surface of the shell and having a thick periphery and a comparatively thin central portion with a demarcated peeling tab extending to the periphery of the liner;

at least one adhesive interfacial layer containing an acid-modified olefin resin and separating the liner from and peelably bonding said liner to the shell and having a non-adhesive or weakly adhesive zone underlying and corresponding to the periphery of the liner and a relatively strongly adhesive zone underlying and corresponding to the central portion of the liner; and

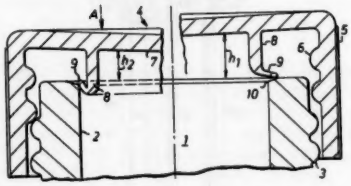
a masking layer disposed in contact with the adhesive layer and containing a composition to control the distribution of the modified olefin resin within the adhesive layer.

4,253,581

CONTAINER WITH SCREW CAP

Dietmar Aichinger, Arlesheim, and Albert Obrist, Reinach, both of Switzerland, assignors to Albert Obrist AG, Reinach, Switzerland

Continuation of Ser. No. 757,696, Jan. 7, 1977, abandoned, which is a division of Ser. No. 698,597, Jun. 22, 1976, Pat. No. 4,016,996. This application Jan. 12, 1979, Ser. No. 3,023
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1975, 2529340
The portion of the term of this patent subsequent to Apr. 12, 1994, has been disclaimed.
Int. Cl.[3] B65D *53/00*
U.S. Cl. 215—344 5 Claims



1. In the combination of a pressurized container having an externally threaded neck and a synthetic plastics screw stopper comprising an internally threaded screw cap and an approximately cylindrical seal part protruding centrally from the cap top and having an outwardly projecting sealing lip of which the outside diameter, before application of the stopper to the container neck, is greater than the inside diameter of the container neck and which on application of the stopper to the container neck is bent back outwardly on itself and abuts in sealing manner with the cylindrical inner wall of the container neck, the improvement that the external screw-threading of the container neck, the internal threading of the screw cap, the seal part and the sealing lip are so formed in relation to one another that, at least when the screw stopper is applied to the container neck for the first time, the sealing lip engages the rim of the container neck and is at least partially bent back on itself thereby, before the internal screw-threading of the cap and the external threading of the container neck engage one another to an extent sufficient to prevent disengagement thereof by the internal pressure in the container, whereby, on unscrewing the stopper from the container neck, the sealing lip is disengaged from the container neck and releases the pressure in the container before the screw threads on the container neck and on the cap are disengaged to an extent allowing the stopper to be blown off.

4,253,582

EASY-OPEN CONTAINER END

Michael R. Shields, 262 Fishing Creek Rd., Cape May, N.J. 08204

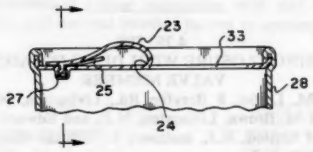
Filed Jan. 14, 1980, Ser. No. 111,533
Int. Cl.[3] B65D *41/32*
U.S. Cl. 220—269 14 Claims

1. An easy-open container end comprising:

(a) an end wall panel permanently sealed to container forming an edge around the periphery of the end wall,

(b) a score line, in the end wall defining a tear strip, having a starting point on the end wall near the edge and a terminal point leaving the strip permanently attached to the remainder of the end wall,

(c) a finger pull tab means secured to the starting end of the tear strip, the tab means including a free end to pull the strip away from the end wall severing along the score line to form a pour opening,



(d) a pressure knob extending from the finger pull tab means, and

(e) a knob securing means in the end wall positioned to receive and hold the pressure knob when the finger pull tab means has been used to pull the tear strip open to define the pour opening, wherein the securing means does not breach the integrity of the container at least until the pressure knob is secured in the securing means for the first use.

4,253,583

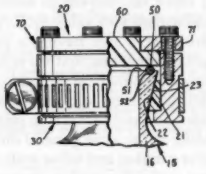
CLOSURE FOR CONTAINER

Brian Lynch, Norcross, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 31, 1980, Ser. No. 117,315

Int. Cl.³ B65D *41/16*

U.S. Cl. 220—319 **11 Claims**



1. A closure for sealing a container having a portion which communicates the interior of the container with an external surface of said container, said closure comprising:

an annular seal which is adapted to be disposed about a portion of the container which communicates the interior of the container to an external surface of the container through an opening in the external surface;

retaining means which is adapted to be disposed about said annular seal for supporting said annular seal in clamped engagement with said portion of the container;

means adapted to engage said external surface of the container for sealing the opening; and

means which is adapted to be assembled to said retaining means for causing said sealing means to be moved into clamped engagement with said external surface.

4,253,584

RING AND CLOSURE FOR CANS

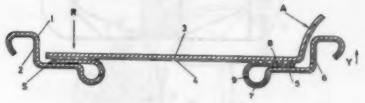
Siegfried Bloeck, Singen, Fed. Rep. of Germany, and Rudolf Lüthi, Niederwangen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 21, 1979, Ser. No. 40,499

Claims priority, application Switzerland, Jun. 6, 1978, 6197/78

Int. Cl.³ B65D *41/00*

U.S. Cl. 220—359 **14 Claims**



1. A closure for a container comprising in combination a ring having an opening and a can lid for sealing said opening wherein said ring has a first and a second surface, a vertical wall extending in a first direction from said first surface and a cut out edge portion defining said opening which is bent over in said first direction away from said opening so that said first surface of said ring is substantially parallel and proximate to the first surface of said bent over edge portion, wherein said lid comprises a thin aluminum strip having a lacquered surface which seals on the second surface of said bent over portion so as to close said opening.

4,253,585

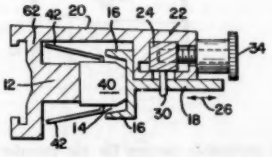
DIP COMPONENT SUPPLY MAGAZINE

Stanley Janisiewicz, Endwell, and Robert H. Holmes, Binghamton, both of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,683

Int. Cl.³ B65H *31/20*

U.S. Cl. 221—242 **8 Claims**



1. In a magazine for vertical, end-to-end storage and lateral supply of a plurality of DIP components, said magazine having an elongate guide rail parallel and opposed to and spaced apart from an elongate channel to form a chute therebetween, said chute having a loading end and a discharge end and said guide rail being contoured to be straddled with a sliding fit by opposed pairs of prongs of said DIP components, the improvement comprising:

an adjustment means for varying the chute spacing between said guide rail and said elongated channel to accommodate components of different body thicknesses;

a reduced lead-in portion at said loading end of said guide rail;

a lead-in rail linear with said guide rail and abutting said lead-in portion; and

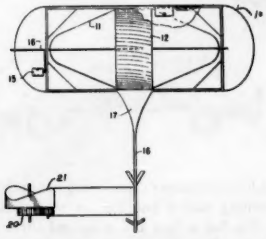
a padded clamp means for clamping a component supply stick to said lead-in rail.

4,253,586

PNEUMATIC PLANTER HAVING CONTROLLED MOVABLE NOZZLE

Leon C. Jalas, R.R., Sutherland, Iowa 51058

Filed May 16, 1977, Ser. No. 797,477
Int. Cl.³ B65G *53/58*
U.S. Cl. 221—278 **2 Claims**



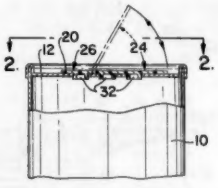
1. Seed planting means comprising seed container means having an outlet, means in said container to bring seed individually to said outlet in rapid succession, nozzle means leading from said outlet through which said seeds are accelerated and from which they are discharged, said nozzle means being movable in all directions except axially thereof and motion inducing means attached to said nozzle to control the motion thereof, said motion inducing means including cam and follower means adapted to move said nozzle in a "saw-tooth" pattern to provide for substantially row-crop planting.

4,253,587

RECLOSABLE CLOSURE FOR POWDER CAN

Lewis L. Otterson, Chagrin Falls, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Jun. 25, 1979, Ser. No. 51,378
Int. Cl.³ B65D *41/16*
U.S. Cl. 222—151 **2 Claims**



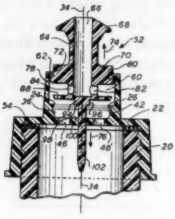
1. In a reclosable closure for the circular array of holes which is provided in the top wall of cleanser cans and the like for dispensing the powdered product contained in the can, a plastic disc overlying all said holes of said array but overlying only a minority of the total area of said top wall, said disc being generally concentric with said array and being hinged along a chord line and being relatively rigid at other locations, said chord line overlying no portion of any of said holes of said array but rather dividing said disc into (1) a lid area overlying the entireties of the members of a first sub-array of said holes comprising a majority of the members of said circular array of holes and (2) a base area overlying the entireties of the members of a second sub-array of said holes comprising the remaining minority of the members of said circular array of holes, a circular array of protrusions on the underside of the plastic disc matching said circular array of holes and respectively receivable in the members of said circular array of holes in one-to-one correspondence, said circular array of protrusions comprising (1) a first sub-array of said protrusions on the underside of said lid area and corresponding to said first sub-array of holes and (2) a second sub-array of said protrusions on the underside of said base area and corresponding to said second sub-array of holes, said disc being reclosably held on said top wall exclusively by said protrusions being received and retained in said holes, the circular array of holes and protrusions having a regular angular spacing, the disc protrusions being registrable for assembly with the top wall holes in any one of a number of angular positions equal to the number of holes in the periphery of the circular array.

4,253,588

DISPENSING CLOSURE WITH DISC-LIKE MEMBRANE VALVE MEMBER

William M. Lester, 8 Brayton Rd., Livingston, N.J. 07039; Edward M. Brown, Livingston, N.J., and Edward J. Towns, Convent Station, N.J., assignors to William Morris Lester, Livingston, N.J.

Filed Apr. 30, 1979, Ser. No. 34,289
Int. Cl.³ B67D *3/00*
U.S. Cl. 222—153 **18 Claims**



1. In a fluid dispensing closure for a squeezable container the combination comprising:

a housing including container fluid inlet means,

an annular resilient valve member having a given valve surface diametrical dimension, said valve member comprising a plane disc-like membrane having upper and lower substantially parallel plane surfaces terminating at said valve surface at the peripheral edge of said membrane,

means for displacing said member towards and away from said inlet means in a given axial direction,

a first tapered valve seat having its smaller diametrical dimension smaller than said valve surface dimension,

a second tapered valve seat having a greater diametrical dimension greater than said first valve seat smaller dimension and a smaller diametrical dimension smaller than said valve member dimension, said second seat being between said inlet means and said first seat in said given axial direction and sloping in the same general direction as said first seat, said valve member and valve seats each being dimensioned so that said valve surface makes substantially line contact with said valve seats only at said peripheral edge when engaged therewith, and

fluid discharge cavity means in fluid communication with said valve member and seats.

4,253,589

MULTI-PURPOSE PLASTIC DISPENSER

James H. Kiste, Jr., 1122 Country Club La., P.O. Box 231, Ashland, Ohio 44805

Filed Apr. 3, 1979, Ser. No. 26,665
Int. Cl.³ G01F *11/00*
U.S. Cl. 222—390 **3 Claims**

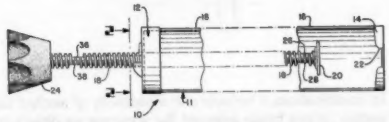
1. A multi-purpose dispenser such as a caulking gun including a unitary molded plastic frame with two end members and a connecting means, which frame is adapted for receiving a caulking cylinder or the like therein,

a drive screw with a pressure plate operatively connected thereto at one end, and

a handle means secured to the other end of said screw,

one of said end members threadedly engaging said screw and said caulking gun being characterized by

said screw having two longitudinally spaced sections of reduced area to make said screw releasable from said one end member when said screw is operatively engaged therewith and is moved to bring one of said sections into a preestablished release association with said one end member, said one end member having an opening therein



in an upper portion thereof connected to a thread engaging aperture therein by a release slot, said thread engaging aperture engaging said screw and retaining it in said aperture, said screw being of reduced width at said longitudinal sections thereof, said release slot being sized to pass said one longitudinal section therethrough when said reduced width is aligned with said release slot, said drive screw having a thread thereon extending from said handle means and to said pressure plate and being engaged with said thread engaging aperture to be only axially movable for a major portion of its length.

4,253,590

DRY HEAT SETTING REFRACTORY AND METHODS OF USING SAME

John P. Holt, Ladue, and Theodore P. Cash, Bonne Terre, both of Mo., assignors to Valley Mineral Products Corporation, St. Louis, Mo.

Division of Ser. No. 38,918, May 14, 1979. This application Aug. 23, 1979, Ser. No. 68,744

Int. Cl.³ B22D *41/02*

U.S. Cl. 222—590 **10 Claims**

1. A method of cementing a nozzle to a nozzle block in a steel pour ladle comprising the steps of positioning the nozzle in the nozzle block opening so that a space exists between the nozzle and the block, positioning a dry heat setting refractory composition comprising about 94% to about 98% refractory material which includes a fines fraction containing −200 mesh magnesite and about 6% to about 2% of a hydrated alkali silicate in a dry state in said opening between the nozzle and the block, tapping all or a substantial part of a furnace heat of molten metal into the ladle and onto the surface of said refractory composition, and reacting the alkali silicate with the magnesite fines to fuse the refractory between the nozzle and the nozzle block.

4,253,591

MERCURY DOSER

John J. Karikas, Shelby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,346

Int. Cl.³ G01F *11/22*

U.S. Cl. 222—636 **8 Claims**

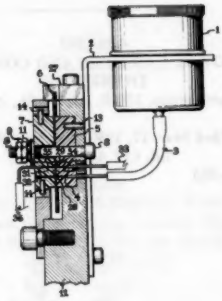
1. A mercury doser for dispensing a measured charge of mercury or similar substance comprising:

a reservoir for mercury,

means defining a conduit for mercury extending from said reservoir to a metering plate,

said metering plate being smooth-faced, of material not wetted by mercury, and having a hole through it forming a sized cavity for accommodating a measured charge of mercury,

smooth-faced blocks of material not wetted by mercury engaging opposite sides of said metering plate and means pressing the blocks against the plate in order to seal thereto, said conduit extending through one block to said plate at a loading position, the other block having a vent port leading from said plate at the loading position, said port being so fine that surface tension prevents mercury from passing through it,



means defining a delivery channel extending from said plate through one block at an unloading position,

and means for moving said metering plate so as to shift said sized cavity back and forth between the loading and the unloading positions and dispense a charge of mercury corresponding thereto at each cycle.

4,253,592

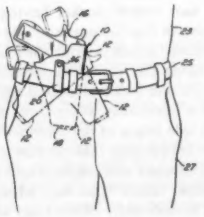
BELT LOOP ANCHORING DEVICE FOR A GUN HOLSTER

Warren F. Anderson, 11215 Hatteras St., North Hollywood, Calif. 91601

Filed Apr. 23, 1979, Ser. No. 32,153

Int. Cl.³ B41C *33/02*

U.S. Cl. 224—198 **3 Claims**



1. In combination with the body of a human being, said body having a waist area, a belt worn about said waist area, said belt to secure a pair of trousers onto said body, a pistol hoster to be located between said body and said belt, said pistol holster comprising:

a thin-walled housing having an internal chamber adapted to support an object to be carried, said housing having an exterior surface and an inner surface, said inner surface to be against said body, said exterior surface to be against said belt;

a strip of material having a first end and second end formed into a loop, said belt to pass through said loop, said exterior surface of said housing to be against said strip of

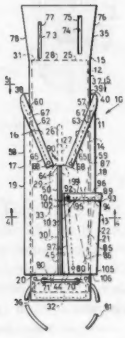
material, said first end being connected by a swivel connection to said exterior surface of said housing, whereby said strip of material is capable of being located anywhere along said belt and also said housing is capable of assuming a plurality of different inclined positions in respect to said belt to accommodate either the right or left hand, the desired inclined position being established by the individual and maintained due to the inherent wedging pressure between said body and said belt.

4,253,593

FLAT TROWEL CARRIERS AND COMBINATIONS THEREWITH

Norbert C. Pattermann, 320 E. Alpine St., Altamonte Springs, Fla. 32701

Filed Mar. 17, 1980, Ser. No. 130,861
Int. Cl.³ A45C *11/00*
U.S. Cl. 224—253 **4 Claims**



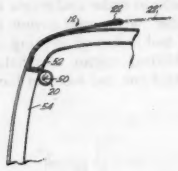
1. A flat trowel carrier having a trowel pocket and comprising a pliant, flat, generally rectangular body member which includes an upper end portion, a lower end portion, and an intermediate portion that is located between said upper end portion and said lower end portion, said intermediate portion forming the back wall of said trowel pocket and having opposite side edges, a rear face that extends between said opposite side edges, and a front face that extends between said opposite side edges, said trowel pocket having a front wall forming pliant component that has opposite side edge marginal portions which are located at and overlay the rear face of the intermediate portion along the respective opposite side edges thereof, a bottom end portion which is located adjacent to said lower end portion and is outwardly offset from said front face between the opposite side edges of the intermediate portion to provide a bottom pocket opening that extends across the front face and between the opposite side edges of said intermediate portion, a top end portion which is located adjacent to said upper end portion and is outwardly offset from said front face between the opposite side edges of the intermediate portion to provide a top pocket opening that extends across the front face and between the opposite side edges of said intermediate portion, and an elongated narrow and vertically oriented medial portion which projects outwardly of the pocket and is spacedly offset from and located intermediate the opposite side edge marginal portions of the pliant component to form a vertical rib that extends between said bottom pocket opening and said top pocket opening to stiffen the front wall formed by said pliant component, and means along said opposite side edges of the intermediate portion for securing the opposite side edge marginal portions to the rear face of said intermediate portion, said upper end portion of the body member having means for suspending the carrier from a belt.

4,253,594

ANCHOR STRAP

Robert P. Parks, 114 W. Ave. A, Key Largo, Fla. 33037

Filed May 4, 1979, Ser. No. 35,914
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—318 **1 Claim**



1. In combination, a vehicle and a plurality of anchor straps, said anchor straps being adapted for securing an object to the vehicle,

said vehicle having a top and a frame, said frame defining opposed sides and an interior and each of said frame sides having an opening in the frame, a swingable access door to the interior of the vehicle normally nested in closing relation of each of said openings, mutually intercooperating means on each of the doors and frame at each of the openings to hold each of the doors in said normally nested closing relation; and

each of said anchor straps of said plurality comprising a strip of flexible pliable relatively thin, relatively non-elastic material having a first end and a second end, loop means defined at the first end and a core of solid material in the loop at said first end, the second end of said strip being spaced from said first end a distance of between 3 inches and 3 feet;

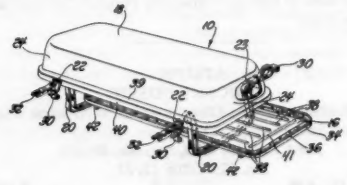
and tie means extending from and connected to the second end of each anchor strap for tying engagement about an object positioned on the top of the vehicle with said loop and solid core at each of said first ends being captivated at the opening by its associated door within the frame when the access doors are in closing relation of their associated openings with each of said anchor straps extending from the frame and with said tie means captivating said object to the vehicle top.

4,253,595

TRUNK MOUNTED CARGO CARRIER

Charles E. Tiffany, 5100 Abington Rd., Troy, Mich. 48098

Filed Feb. 7, 1980, Ser. No. 119,341
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—328 **8 Claims**

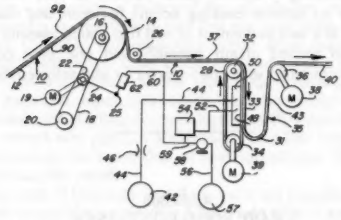


1. A cargo carrier assembly for attachment to a body surface of a vehicle and comprising; a base member, a dome member including side walls adapted to receive said base member and having holes therein, attachment means including at least one strap member threadedly engaging one of said holes in one of said side walls and extending under said base member and threadedly engaging one of said holes in the opposite of said side walls for securing said dome member and base member together, said strap member including two portions having

securement means thereon for adjustably securing said assembly to the body surface of a vehicle.

4,253,596
Patent Not Issued For This Number

4,253,597
LOOSE LOOP FEED CONTROL APPARATUS
William D. Waffner, East Aurora, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.
Filed Jul. 9, 1979, Ser. No. 55,550
Int. Cl.³ B65H *23/18*
U.S. Cl. 226—40 **9 Claims**



1. An improved apparatus for feeding a web of material from a source of supply to a desired destination, wherein the web forms a vertical loose loop between the source of supply and the desired destination, wherein the web is infed from the source of supply to the loose loop along a first predetermined direction, wherein the web moves from the loose loop toward the desired destination along a second predetermined direction, and wherein the loose loop of the web has a descending side, an ascending side and a downwardly extending curved portion interconnecting the lower ends of the descending and ascending sides of the loose loop;

means for feeding the web to the loose loop along the first predetermined direction and at a variable infeed speed, the feeding means including means for varying the infeed speed of the web;

a belt positioned to be in surface to surface contact with the web along at least a portion of the descending side of the loose loop, the belt having a series of evenly spaced perforations therein adapted to be positioned beneath the web when the web is in contact with the belt;

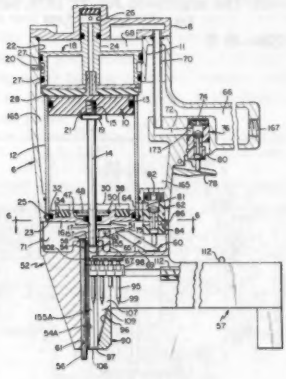
a source of vacuum;

a chamber having an open side disposed, in surface to surface engagement, with the belt on the side of the belt opposite its web-contacting surface;

means for connecting the source of vacuum with the chamber so that the degree of vacuum in the chamber may be varied by the number of perforations in the belt covered by the descending side of the loose loop of the web; and

means responsive to the variation in the degree of vacuum in the chamber for controlling the infeed speed varying means, and in turn, for controlling the infeed speed of the web to the loose loop.

4,253,598
FLUID POWERED IMPACT TOOL
Harry M. Haytayan, Sunnyside La., Lincoln, Mass. 01773
Filed Feb. 23, 1979, Ser. No. 14,268
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—119 **14 Claims**



1. In a fastener driving tool suitable for driving fasteners having a pointed tip portion and a headed portion which is larger in diameter than said tip portion and upon which said fasteners may be impacted to be driven tip first into a workpiece, said driving tool comprising:

means defining (a) a hammer guideway which terminates in a fastener discharge opening and (b) a fastener-feeding opening in the side of said guideway, said guideway being so dimensioned and configured as to accommodate at all positions along said guideway between and including those of said fastener discharge opening and of said fastener-feeding opening all portions of a fastener to be driven;

means for feeding fasteners one at a time through said fastener-feeding opening into said guideway, said means for feeding fasteners including a fastener-holding magazine alongside said guideway and communicating with said fastener-feeding opening;

a hammer slidably disposed in said guideway for impacting fasteners disposed in said guideways and discharging said impacted fasteners from said tool via said fastener opening, said hammer being movable in said guideway between a first retracted position short of said fastener-feeding opening and a second extended position beyond said fastener-feeding opening; and

means for reciprocating said hammer between said first and second positions;

the improvement comprising a groove-defining cam surface which is disposed to one side of said guideway and situated between and distinct from said fastener-feeding opening and said fastener discharge opening, said groove being so dimensioned as to accept only a tip portion of said fastener, said cam surface being directed from said fastener-holding magazine toward said guideway and inclined with respect to said guideway so as to exert a camming action on the tip portions of said fasteners disposed in said guideway which tend to assume a canted position relative to said guideway when impacted by said hammer.

4,253,599

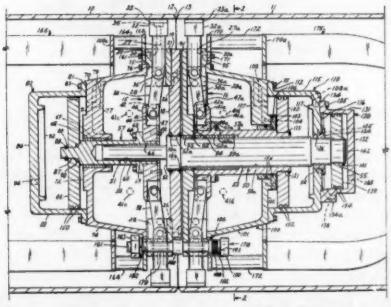
PIPE WELDING CLAMP INCLUDING PIPE END SPACING MEANS

Clyde M. Slavens, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Continuation-in-part of Ser. No. 875,913, Feb. 7, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 61,488

Int. Cl.³ B23K *37/04*

U.S. Cl. 228—49 B **8 Claims**



1. Pipe welding clamp, comprising a first clamp assembly comprising a plurality of circularly spaced clamps, means for simultaneously expanding and retracting said clamps of said first clamp assembly, a second clamp assembly comprising a plurality of circularly spaced clamps, means for simultaneously expanding and retracting said clamps of said second clamp assembly, said first and second clamp assemblies being axially spaced and adapted to be separately expanded and set within the ends of first and second pipes disposed end to end, an axial central shaft, said first and second clamp assemblies having respective first and second circular plate means each having an opening through which said axial central shaft is disposed, said first circular plate means being fixed to said axial central shaft whereby said first clamp assembly is fixed against movement along said axial central shaft, said second circular plate means being slidably supported on said axial central shaft whereby said axial central shaft and said first clamp assembly are axially movable with respect to said second clamp assembly, said first and second circular plate means being disposed adjacently in uniformly spaced facing relation on said axial central shaft, drive means adapted to relatively move said first clamp assembly axially in both directions to relatively move a said first pipe in which said first clamp assembly is set axially with respect to said second clamp assembly and a said second pipe in which said second clamp assembly is set, spacing limiting means comprising three circularly spaced spacing shaft means each fixed at one end portion against longitudinal movement through an opening through one of said clamp assemblies and each having its other end portion freely longitudinally slidable through an opening through the other of said clamp assemblies, each of said spacing shaft means having an outwardly projecting collar therearound between said end portions having a predetermined accurate axial thickness and one end of which is flushly disposed against said one of said clamp assemblies and the other end of which provides a gaging surface for engagement by the inner side of said other of said clamp assemblies, each said spacing shaft means having nut means adjustably screwed onto its said other end portion beyond a said opening through which it is freely longitudinally slidably disposed, and including cooperating calibration means on said nut means and on said spacing shaft means for accurately adjusting the distances of said nut means from the outer side of said other of said clamp assemblies to equal selected distances, whereby first and second pipes may be accurately spaced end to end by clamping said first and second pipes abutted end to end with said first and second clamp assemblies and with said other of said clamp assemblies firmly engaged at its inner side with said gaging surfaces of said three outwardly projecting collars whereby said inner side of said other of said clamp assemblies is disposed in a predetermined first plane, and then operating said drive means to move said one of said clamp assemblies by a selected distance limited by the positions of said nut means on said spacing shaft means, said three nut means defining a second plane parallel to said first plane whereby no relative cocking occurs between said clamp assemblies in a said movement of said first clamp assembly away from said second clamp assembly and said pipe ends are thereby accurately uniformly spaced by said selected distance.

4,253,600

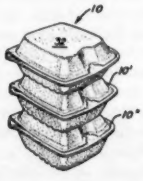
FAST FOOD CONTAINER

John C. Schubert, Chippewa Falls, Wis., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 826,719, Aug. 22, 1977, abandoned. This application May 3, 1978, Ser. No. 902,339

Int. Cl.³ B65D *43/10, 1/26, 5/66*

U.S. Cl. 229—2.5 R **11 Claims**



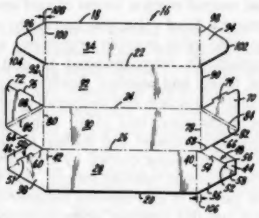
1. In a deformable container comprising top and base members, said base member having outwardly and upwardly sloping front side and rear walls and said top member having outwardly and downwardly sloping front side and rear walls, latch means adapted to form a secure closure between said top and base members, each said latch means comprising a lip on the outer end of a wall on one of said members, a shoulder having a downwardly extending sidewall projecting inwardly from said lip on said wall, two slots extending through the sidewall of said shoulder, and two tabs on the other of said members adapted to interlock with said slots.

4,253,601

SELF CLOSING CARTON OR CONTAINER

Irwin I. Kossoff, Fort Lee, N.J., assignor to United States Box Corp., Newark, N.J.

Filed Jul. 6, 1979, Ser. No. 55,346
Int. Cl.[3] B65D 5/00
U.S. Cl. 229—22 14 Claims



1. A blank for a carton, comprising:

a sheet material, said sheet having first and second opposing transverse marginal edges, three transverse fold lines longitudinally spaced between the marginal edges for sequentially defining four substantially rectangular side panels between said first and said second marginal edges;

a first pair of substantially triangular end flaps laterally extending from opposite ends of a first side panel, a longitudinal fold line respectively separating each end flap of said first pair from said first side panel;

a substantially trapezoidal section respectively extending from a side edge of each end flap of said first pair which side edge is remote from said first marginal edge, a respective U-shaped cut projecting across from each of said remote side edges onto a base of its adjacent trapezoidal section, a diagonal fold line separating remaining portion of each said trapezoidal section from its adjacent end flap;

a second pair of triangular end flaps laterally extending from a second side panel, a longitudinal fold line respectively separating each end flap of said second pair from said second side panel;

a third pair of triangular end flaps, each end flap of said third pair respectively extending from a side edge of an end flap of said second pair which lies remote from said first marginal edge, a diagonal fold line respectively separating each end flap of said third pair from its adjacent end flap of said second pair, a U-shaped tab projecting from a side edge of each end flap of said third pair which side edge lies remote from said first marginal edge, said U-shaped cut being of a size to securely receive said U-shaped tab;

a fourth pair of triangular end flaps laterally extending from a fourth side panel, a longitudinal fold line respectively separating each end flap of said fourth pair from said fourth side panel; and

said first and second side panels being adjacent to each other, said second and third side panels being adjacent to each other, and said third and fourth side panels being adjacent to each other to define said four side panels.

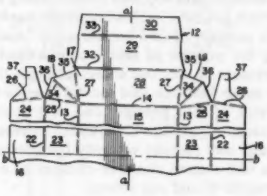
4,253,602

TRAY CONTAINER WITH DOUBLE PANEL SIDEWALLS

Francis V. Kulig, Morris, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Jul. 5, 1979, Ser. No. 54,719
Int. Cl.[3] B65D 5/22, 5/24
U.S. Cl. 229—31 R 2 Claims

1. A container formed from a single cut and scored blank of paperboard sheet material which is coated with a heat resistant film forming material, said container being in the form of a rectangular tray having a bottom wall forming panel, integral sidewall and end wall forming panels in oppositely disposed paired relation upstanding from the periphery of the bottom wall forming panel and integral connecting web panels in paired relation at each corner, each pair of said web panels being folded upon a median line and into overlying relation on the outside face of the end wall to which they are hinged, so as to render the corner leakproof for at least a major portion of the depth of the tray, as measured from the bottom wall forming panel, said sidewall and end wall forming panels each having an integral reinforcing panel folded down from the top edge thereof and adhesively secured to the outside face of said panel, a corner reinforcing tab extending from the sidewall reinforcing panel and adhesively secured along the top margin



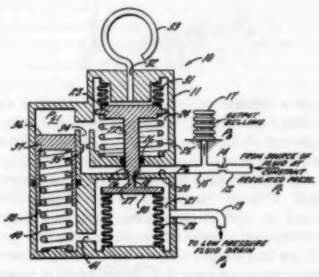
of the outside face of the end wall panel against which the folded web panels are in overlying relation, each said reinforcing tab underlying the end wall reinforcing panel which is folded down from the top edge of said panel and which overlies and is adhesively secured to the corner reinforcing tab members, each said end wall reinforcing panel extending the full depth of the end wall panel to which it is hinged and secured in outer end wall forming relation and each said end wall reinforcing panel having a narrow terminal panel adhesively secured to end marginal portions of the bottom face of said bottom wall panel.

4,253,603

TEMPERATURE RESPONSIVE CONTROL APPARATUS

Bruce A. Johnson, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed Jan. 19, 1979, Ser. No. 4,701
Int. Cl.[3] G05D 23/12
U.S. Cl. 236—86 16 Claims



11. Temperature responsive control apparatus comprising a temperature probe having an internal volume filled with gas and exposed to a variable temperature condition to be sensed whereby the pressure of the gas changes as a function of variations in the sensed temperature, a first source of pressurized liquid, a first pressure responsive valve acted upon by said gas and movable to different positions in response to changes in the pressure of said gas, said valve being operable when moved to different positions to change the pressure of said pressurized liquid, a first chamber containing said pressurized liquid with the liquid in the chamber acting on said valve in opposition to said gas to create a feedback pressure on said valve, the improvement in said apparatus comprising, a second source of

pressurized liquid for producing a control signal, a second pressure responsive valve establishing communication between said first and second sources, said second valve being acted upon in one direction by said first source and in the opposite direction by said second source and being movable to different positions in response to increases in the pressure of said first source, said second valve being operable when moved to different positions to change the pressure of said second source, a second chamber containing pressure fluid which acts on said second valve in opposition to said first source, a passage establishing communication between said chamber and one of said sources, said second chamber being defined in part by a wall which can be moved without mechanically changing the effective position of said second valve, said wall moving and causing the volume of said second chamber to change when the pressure of said one source changes thereby to permit flow to occur between said second chamber and said one source by way of said passage, and said passage being restricted to cause a pressure differential to result when flow occurs through said passage whereby the pressure created by the liquid in said second chamber changes at a different rate than the pressure of said one source.

4,253,604

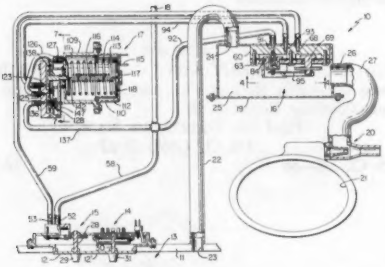
PNEUMATIC CONTROL MEANS FOR A VEHICLE HEAT EXCHANGER SYSTEM OR THE LIKE

Douglas S. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 864,455, Dec. 27, 1977, Pat. No. 4,194,687. This application May 29, 1979, Ser. No. 43,346

Int. Cl.³ G05D *23/08*

U.S. Cl. 236—87 **18 Claims**



1. In a thermostat construction having a valve means for directing a pneumatic signal to a pneumatically operated control device in relation to the force differential between the temperature sensed by a temperature sensing means thereof and the temperature setting of a temperature setting means thereof, a lever having a pivot means thereof pivotally mounted to said construction, said lever being operatively interconnected to said valve means at a first portion means of said lever and to said temperature setting means and said temperature sensing means at a second portion means of said lever, the improvement wherein said temperature setting means is pneumatically operated and includes a flexible diaphragm, and interconnecting means operatively interconnecting said diaphragm to said second portion means of said lever, said temperature sensing means comprising a bimetal member carried by said construction and being operatively interconnected to said interconnecting means intermediate said second portion means of said lever and said flexible diaphragm to be operatively interconnected thereby to said second portion means of said lever.

7. In a thermostat construction having valve means for directing a pneumatic signal to a pneumatically operated control device in relation to the force differential between the temperature sensed by a temperature sensing means thereof and the temperature setting of a temperature setting means thereof, a lever having a pivot means thereof pivotally mounted to said construction, said lever being operatively interconnected to said valve means at a first portion means of said lever and to said temperature setting means and said temperature sensing means at a second portion means of said lever, the improvement wherein said temperature setting means is pneumatically operated and includes a flexible diaphragm, interconnecting means operatively interconnecting said diaphragm to said second portion means of said lever, said valve means comprising a fixed valve seat carried by said construction and a movable valve member controlling said valve seat and being operatively interconnected to said first portion means of said lever, and another flexible diaphragm being carried by said construction and cooperating with said valve seat to define a chamber, said other diaphragm having an opening passing therethrough and leading to said chamber, a rigid cup-like member being carried by said other diaphragm and being disposed in said opening thereof, said valve member being movably carried in said cup-like member to control said valve seat, said cup-like member being operatively interconnected to said first portion means of said lever.

4,253,605

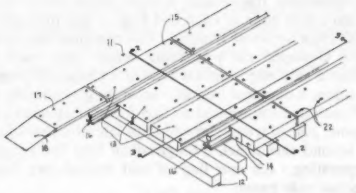
RAILWAY CROSSING STRUCTURE

Robert L. Sims, 5145 Bald Eagle Ave., White Bear Lake, Minn. 55110

Filed May 23, 1979, Ser. No. 42,101

Int. Cl.³ E01B *2/00*

U.S. Cl. 238—8 **3 Claims**



1. A prefabricated railway crossing structure comprising: four channel members, each channel member formed of two U-shaped metal channels with each channel having a rectangular cross section and being welded to an adjacent channel in side-by-side relationship, with a metal plate welded across the upper, open portions of each pair of channels, the metal plate and the bottom portion of each channel member having aligned apertures such that fasteners can be inserted through the plate for fastening one pair of channel members to successive railroad ties between the rails in parallel relationship thereto and in slightly spaced apart relationship, and for fastening each of the other two channel members to successive railroad ties on the outside area of the rails.

4,253,606

AUTOMATIC SPRINKLER CONTROL

Lonnie G. Johnson, 1463 E. Barkley Dr., Mobile, Ala. 36606

Filed Aug. 30, 1979, Ser. No. 71,110

Int. Cl.³ A01G *25/00*

U.S. Cl. 239—63 **3 Claims**

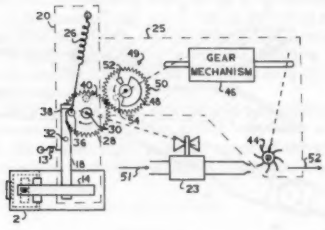
1. An automatic sprinkler control for maintaining soil moisture of the ground area serviced by a lawn sprinkler system at a preset level by controlling the flow of water to said sprinkler system, said automatic sprinkler control being sensitive to the moisture content of the ground and of the aboveground ambient air and comprising:

a. a water valve means for controlling water flow to said sprinkler system,

b. a humidity chamber means, a humidity sensitive element means and a latch means, said humidity chamber means being positioned within the ground area serviced by said

sprinkler system and maintaining an internal humidity level which depends on the soil moisture level of the ground area serviced and on the aboveground ambient humidity, said humidity sensitive element means being positioned inside said humidity chamber means and coupled to said latch means, said humidity sensitive element means responding to changes in soil moisture considered with ambient humidity by causing said latch means to move,

c. a spring loaded valve opening mechanism means and a sensitivity adjustment means, said spring loaded opening mechanism means being operatively coupled to said water valve means and having an initial state such that said water valve means is closed, said latch means being operatively coupled to said spring loaded opening mechanism means, said humidity sensitive element means causing said latch means to be positioned so as to prevent motion of said spring loaded opening mechanism means from an initial state when the soil moisture of the ground area serviced considered with ambient humidity is above a desired level, said humidity sensitive element means responding to drops in soil moisture considered with ambient humidity below a desired level by causing said latch means to be positioned so as to permit motion of said spring loaded opening mechanism means, said spring loaded opening mechanism means in turn moving to open said water valve means allowing water to flow to said



sprinkler system, said sensitivity adjustment means being coupled to said humidity sensitive element means and controlling the level of internal humidity of said humidity chamber means below which said humidity sensitive element means initiates open states of said water valve means and thereby functioning as a means for selecting a desired level of soil moisture considered with ambient humidity to be maintained by said automatic sprinkler control,

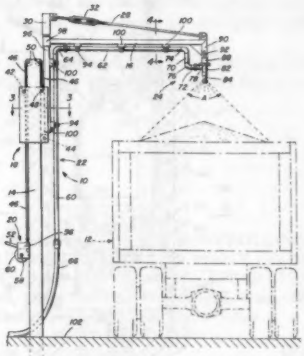
d. a valve closing mechanism means, said valve closing mechanism means being coupled to said spring loaded opening mechanism means and including an impeller means, a reduction gear mechanism means and a reset mechanism means, said impeller means being coupled to said reduction gear mechanism means and said reduction gear mechanism means being coupled to said reset mechanism means, said impeller means being actuated by water flowing through said water valve means when said water valve means is in an open state, said reduction gear mechanism means being actuated by said impeller means and facilitating a mechanical advantage for rotation of said impeller means to actuate said reset mechanism means and return said spring loaded opening mechanism means to an initial state closing said water valve means, said water valve means being closed after a fixed number of rotations of said impeller means and thereby being closed after a fixed volume of water has been permitted to flow to said sprinkler system.

4,253,607

ADJUSTABLE SPRAY RACK

Melvin J. Gerard, Sr., 2430 Kaiser Rd., Pinconning, Mich. 48650

Filed Aug. 27, 1979, Ser. No. 70,045
Int. Cl.³ B05B 3/18; C10B 39/04
U.S. Cl. 239—185 **7 Claims**



1. An adjustable spray device for spraying downwardly into an open top receptable, the device comprising a vertical fixed support post, a movable carriage means mounted on said post, and liquid spray means, the liquid spray means being mounted on the movable carriage means for vertical movement along the length of the support post, said spray device further including a winch assembly, and a connecting cable attached to the movable carriage means and adapted for drawing and releasing by the winch assembly to raise and lower the movable carriage means on the support post, the winch assembly being fixedly attached to the support post, the movable carriage means comprising a carriage assembly including a pair of parallel side plates straddling the support post, the connecting cable being attached to the carriage assembly by a holding means joined to the parallel side plates, said cable being attached to the holding means at the end remote from the winch means, the carriage assembly having a pair of roller wheels journalled there into, the roller wheels being adapted for guiding the carriage assembly on the support post, the connecting cable extending upwardly from the holding means to pulley means located at the upper extremity of the support post and passing thereover to the winch means, said side plates being attached to a support pipe projecting upwardly, said support pipe being movable with said carriage assembly and supporting a support beam projecting horizontally outwardly therefrom, the support beam supporting the liquid spray means.

4,253,608

PART-CIRCLE SPRINKLER WITH REVERSIBLE STATOR

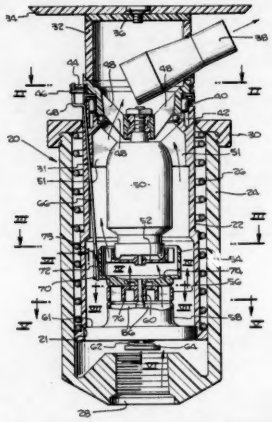
Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Filed May 21, 1979, Ser. No. 41,007
Int. Cl.³ B05B 3/16
U.S. Cl. 239—206 **23 Claims**

1. In a part-circle sprinkler of the type having a housing adapted for connecting to a conduit supplying water under pressure, an impeller for rotating in response to water flowing axially through the housing and incident on the blades of the impeller, a transmission means driven by the impeller, a sprinkler head adapted for rotation by the transmission, and a nozzle mounted to the sprinkler head, the improvement comprising:

reversing stator means, located in said housing in the path of

said supplied water directly below said impeller, for altering the direction of water incident on said impeller, thereby changing the direction of rotation of said impeller and said nozzle wherein said reversing stator means comprises a plurality of vane means for smoothly deflecting a plurality of channelized streams of water against the blades of said impeller;



means for mounting said reversing stator means to said housing; and

actuating means for repeatably applying a direction-reversing stimulus to said reversing stator means, said actuating means mounting to said housing and contacting said reversing stator means.

4,253,609

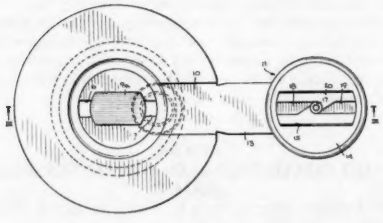
DISPENSING SPRAY NOZZLE

Robert H. Laauwe, Franklin Lakes, N.J., assignor to Essex Chemical Corporation, Clifton, N.J.

Filed Jan. 30, 1979, Ser. No. 7,724

Int. Cl.³ B65D *1/32*

U.S. Cl. 239—327 **1 Claim**



1. A dispensing nozzle comprising at least two parts which fit together so as to form an assembly, a first part having an entrance for a fluid product to be dispensed and a second part having a dispensing spray orifice connecting with said entrance; wherein the improvement comprises said two parts being formed by a single integrated plastic molding with the parts interconnected by a hinge on which the parts swing so as to fit together, said first part comprising a plug adapted to fit a bottle mouth and forming a cavity having a bottom from which a post extends upwardly with two holes opening through said bottom on opposite sides of said post, and said second part comprising a tab extending from the periphery of the first part to an internally solid insert fitting in said cavity and having a recess fitting over opposite sides of said post and spanning said two holes when said parts are swung together, the insert's recess having a bottom shaped so that when the parts are swung together it cooperates with the top of said post so as to form a swirl chamber having a central discharge orifice and tangential injection orifices with the latter respectively connecting with said holes, the top surface of said plug having a groove in which said tab nests when said parts are swung together and said insert fitting in said cavity so as to permanently hold said parts together.

4,253,610

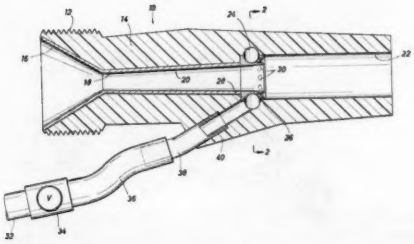
ABRASIVE BLAST NOZZLE

Joe M. Larkin, 1117 Guinea, Houston, Tex. 77055

Filed Sep. 10, 1979, Ser. No. 73,842

Int. Cl.³ B24C *5/04*

U.S. Cl. 239—430 **4 Claims**



1. An improved air blast nozzle which comprises:

(a) an elongate nozzle body having an elongate, axial passage therethrough which passage has an inlet and an outlet;

(b) means for joining said nozzle body to a hose at the inlet of said passage to introduce blast media and air flow through the elongate, axial passage;

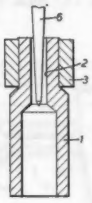
(c) said passage and said nozzle body being constructed and arranged to create a laterally directed aspirating force within said axial passage, said nozzle body including a funnel-shaped portion in said axial passage which serves as a compression venturi to increase the rate of flow of air and particle media flowing through said axial passage which is located upstream of said aspirator force, said funnel-shaped portion further including an axial portion extending therefrom which flares slightly for reducing the lateral aspirating force exerted on the inner walls of the axial passage;

(d) a manifold means for receiving a wetting fluid therein, said manifold means extending about the elongate passage through said nozzle body and further including port means opening from said manifold means into said axial passage to permit wetting fluid to flow into said axial passage at the urging of the aspirating force acting thereon, and further including subsequent length of said axial passage to the outlet thereof in which length wetting fluid introduced into said axial passage is dispersed into the stream of air and blast media flowing through said passage.

4,253,611
JET NOZZLES

William B. Hart, Ipswich, England, assignor to Delta Materials Research Limited, London, England

Filed May 24, 1979, Ser. No. 42,117
Claims priority, application United Kingdom, Jun. 5, 1978, 2634278; Dec. 29, 1978, 50277/78
Int. Cl.[3] B05B 1/00
U.S. Cl. 239—602 5 Claims

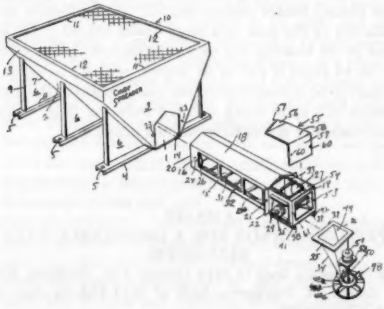


1. A jet nozzle comprising
(a) a nozzle device having an outlet orifice,
(b) said nozzle device
(i) including a nozzle member having a passage therethrough leading to said outlet orifice, and
(ii) being constituted at least in part by a shape memory effect (SME) material having a transition temperature range in which the modulus of elasticity varies progressively and significantly with change of temperature in a reversible manner, said nozzle device including an SME element at least partly circumscribing said nozzle member at least at said outlet orifice and applying to said nozzle member a hoop stress which varies with temperature,
(c) said SME material is so conditioned and arranged that the dimensions of said outlet orifice vary with variation within the transition temperature range of the temperature to which said SME material is subject, but in the opposite direction.

4,253,612
SPREADER FOR CINDERS AND THE LIKE

Clayton E. Schulze, Box 135, Corry, Pa. 16407

Filed Aug. 24, 1979, Ser. No. 69,582
Int. Cl.[3] A01C 19/00
U.S. Cl. 239—672 10 Claims

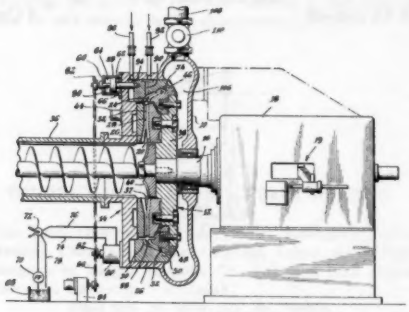


1. Apparatus for spreading granular materials, comprising a hopper adapted to be mounted on and extend longitudinally of a truck or trailer, said hopper having a substantially flat bottom wall, side walls diverging outward and upward from longitudinal edges of the bottom wall and end walls connected between said bottom wall and said side walls, one of said end walls having an opening registering with said bottom wall through which material may be removed,
a conveyor housing with its inboard end insertable into the hopper through said opening and with its outboard end projecting outward from said opening, said housing having a bottom wall resting on the bottom wall of the hopper, a drag bar conveyor in said housing with bars extending between two chains, the bars of the lower reach of the conveyor riding on the bottom wall of the housing and moving toward and through said opening, means for protecting the conveyor from the overlying weight of material,
a distributor for the material, and a chute leading from the housing adjacent the bottom wall of said hopper to said distributor.

4,253,613
METHOD AND APPARATUS FOR CONTROLLING THE EFFECT OF THE CENTRIFUGAL FORCE ON THE STOCK IN PULP DEFIBRATING APPARATUS

Rolf B. Reinhall, 834, 171st Pl. NE., Bellevue, Wash. 98008

Filed Feb. 17, 1978, Ser. No. 877,809
Int. Cl.[3] B02C 7/06
U.S. Cl. 241—16 14 Claims



1. In the method of refining pulp stock in which the pulp material is ground in a grinding space defined between a pair of grinding discs having ridges and grooves providing opposing grinding surfaces, which discs rotate relative to one another in an environment of a fluid medium under superatmospheric pressure and correspondingly elevated temperature in a housing, and in which grinding space the pulp material is accelerated from a central portion outwards towards a peripheral portion by the centrifugal force generated by the relative rotational movement of the discs, the improvement for controlling the effect of the centrifugal force on the pulp, comprising: axially inclining the peripheral portion of the grinding space to form an inner passage extending from said central portion and an outer axially inclined passage having a peripherally outer stationary grinding surface facing an inner rotating grinding surface, the length of said inner passage and the angle of inclination of said outer passage being calculated in accordance with the pulp material and the equipment used to maximize the effect of the centrifugal force exerted on the pulp material in the direction of flow through said inner passage and split the centrifugal force exerted on the pulp material in said outer passage into two force vectors, the vector perpendicular to the direction of flow being greater than the vector in the axial direction of flow, to thereby reduce the outwardly accelerating force.

4,253,614

FLOTATION OF NON-SULFIDE ZINC MATERIALS

Phillip E. McGarry, Palmerton, and Zoran Pacic, Bethlehem, both of Pa., assignors to The New Jersey Zinc Company, Palmerton, Pa.

Filed Jul. 5, 1979, Ser. No. 54,742
Int. Cl.[3] B03B *1/04;* B03D *1/02*
U.S. Cl. 241—24 9 Claims

1. A method for recovering zinc from non-sulfide containing zinc ore, said method comprising the steps of:

grinding said zinc ore to between about 70 and about 200 mesh;

selectively flocculating said ore by admixing said ore with a dispersing agent selected from the group consisting of soluble silicates and condensed phosphates and a flocculating agent selected from the group consisting of caustic tapioca and caustic starch under rapid agitation and permitting the resultant floccules to settle for a pre-determined period of time; and

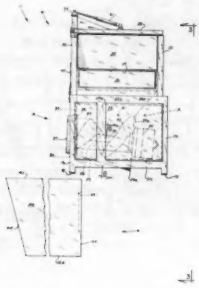
froth floating the floccules in stages with the addition of a collector consisting of between about 0.1 and about 2.0 pounds per ton of ore of an ester of a mercaptocarboxylic acid.

4,253,615

PALLET AUGER

Larry E. Koenig, 1208 Medow Lane Dr., Bettendorf, Iowa 52722

Filed Sep. 4, 1979, Ser. No. 72,715
Int. Cl.[3] B02C *18/38*
U.S. Cl. 241—36 4 Claims



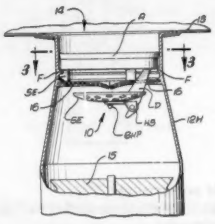
1. A machine for handling and reducing waste and like material, having a material-receiving hopper discharge downwardly into an elongated trough in which an auger rotates to move received material axially lengthwise of the trough and including means cooperative between the auger and the trough to reduce material as it is moved, characterized in that the trough has an elongated imperforate bottom of substantially semi-circular section and opposite sides adjoining the bottom and flaring upwardly and outwardly to lead material directly downwardly from the hopper into the auger and trough substantially throughout the length of the trough, the trough has axially spaced apart generally upright front and rear walls and the front wall has a circular opening therein through which reduced waste is forced by the auger, the trough is larger at its rear end than at its front end so that the bottom inclines upwardly and forwardly from rear to front, the auger is generally coextensive in length with the trough and rotates on an axis coaxial with the center of the front wall opening, said axis inclining downwardly from front to rear and said auger having flighting tapering from a larger end adjacent to the rear wall to a smaller end adjacent to the front wall so that a line extended from rear to front along the bottom of the flighting is substantially parallel to the bottom of the trough whereby material is moved uphill to the opening and is simultaneously compressed and tapered as it exits from the trough through the front wall opening.

4,253,616

GARBAGE DISPOSAL DRAIN PROTECTOR

Dana W. Timmer, 865 Buena Vista Rd., Santa Barbara, Calif. 93108

Filed May 4, 1979, Ser. No. 35,915
Int. Cl.[3] B02C *18/40*
U.S. Cl. 241—46 B 16 Claims



1. A protective device for a garbage disposal or the like wherein the garbage disposal housing has an open end for receiving waste material to be disposed of by means of the disposal, the open end having an exposed flange extending inwardly of the open end a preselected distance, said protective device comprising an annular frame member having a plurality of spaced apart securing elements extending from one side thereof and adapted to secure the frame member to said flange, said frame member including a dependent arm having a free end extending from the frame member from said one side thereof, and

guard means pivotably secured adjacent the free end of the dependent arm adapted to be mounted in a plane substantially parallel to a plane of the said garbage disposal housing's open end and adapted to extend adjacent the side walls of the housing and yet spaced therefrom to be able to permit waste material to move through the space between the housing and the edge of the guard means when the annular frame member is to be secured to the exposed flange of the housing,

the guard means is adapted to normally function to trap utensils and similar large objects inadvertently falling thereon from moving through the disposal's open end to the cutting blades thereof and yet being manually pivotable out of the path of a large object placed in the open end of the housing and moved against the guard element so as to pivot it out of its normal position to allow the object to be moved beyond the guard means to the cutting blades and upon being released from the large object it automatically pivots to its normal position.

4,253,617

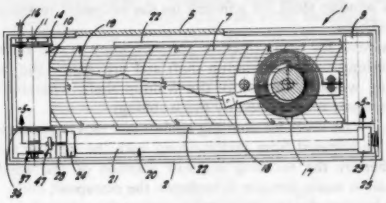
SPEED GOVERNOR FOR A DISPOSABLE DATA RECORDER

George Nakagawa, both of 1812 Dakota Ave., Modesto, 95352, and Robert M. Nakagawa, both of 1812 Dakota Ave., Modesto, Calif. 95351

Filed Sep. 17, 1979, Ser. No. 76,314
Int. Cl.[3] B65H *17/02, 75/48*
U.S. Cl. 242—55 10 Claims

1. A speed governor, for a disposable data recorder which includes a spring motor rotated, tape take-up spool, comprising a windlass connected to and rotated by the spool, a flexible line

attached to the windlass in winding-on relation, and means associated with and operative to yieldably resist motion of the



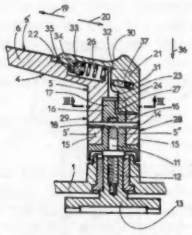
line toward the windlass whereby to retard spring motor rotation of the spool.

4,253,618

FISHING REEL

Alain Beraut, Thyez, France, assignor to Mitchell S.A., France

Filed Oct. 18, 1979, Ser. No. 86,248
Claims priority, application France, Oct. 23, 1978, 78 30693
Int. Cl.[3] A01K *89/00*; G05G *1/00*
U.S. Cl. 242—84.1 J **6 Claims**



1. In a fishing reel having a control shaft for operating the reel,

a control crank comprising a hub having an inner portion integral with said control shaft and an outer portion pivotally connected with said inner portion,

a laterally extending operating lever integral with said outer portion of said hub and a knob at an outer end of said lever, the axis of said pivotal connection of said outer hub portion with said inner hub portion being in a plane containing said lever and the axis of said hub to permit pivotal movement of said outer hub portion and said operating lever between an operating position in which said outer hub portion is axially aligned with said inner hub portion and a non-operating position in which said lever and outer hub portion are folded over laterally to reduce the overall dimensions of the reel, and

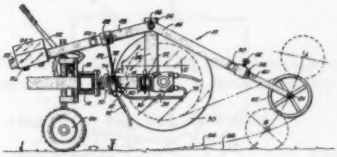
means for releasably holding said outer hub portion and operating lever in operating position comprising a bolt on said outer hub portion and lever and detent means on said inner hub portion engageable by said bolt to secure said outer hub portion and operating lever in operating position, said bolt being movable between a locking position in which it engages said detent means and unlocking position in which it is disengaged from said detent means, means for resiliently urging said bolt to locking position and a push part on said bolt engageable for manually moving said bolt to unlocking position.

4,253,619

APPARATUS FOR HANDLING ELONGATE FLEXIBLE MATERIAL

Clive J. Corderoy, Karamea, Mungindi Rd., and Stanley E. Taylor, 15 Dobbie St., both of Moree, New South Wales, Australia

Filed Jun. 20, 1979, Ser. No. 50,333
Claims priority, application Australia, Jul. 6, 1978, PD4984
Int. Cl.[3] B65H *17/46*
U.S. Cl. 242—86.5 R **9 Claims**



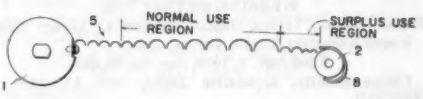
1. Apparatus for handling elongate flexible material comprising a frame, a reel rotatably mounted to said frame, means on said frame for driving said reel at variable speed, a guide roller attached to a sub-frame hingedly mounted to said frame to be movable with respect to said reel under the action of tension in said material which, in operation, extends from the ground, around said roller and onto said reel, means responsive to hinged partial rotation of said sub-frame relative to said frame for varying the speed of said reel thereby to maintain the tension on said material within predetermined limits.

4,253,620

WINDING SPRING FOR SEAT BELT WINDING APPARATUS

Mitsuo Takei, Ohmiya; Toshiyuki Yashiro, Kawaguchi; Noboru Owatari, Ohmiya, and Kazuo Takagi, Tokyo, all of Japan, assignors to Nippon Kinzoku Co., Ltd. and NSK Warner Kabushiki Kaisha, both of, Japan

Filed Sep. 26, 1979, Ser. No. 78,938
Claims priority, application Japan, Sep. 29, 1978, 53-120856
Int. Cl.[3] A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107 **4 Claims**

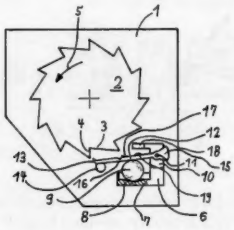


1. A spring motor for a seat belt winding apparatus comprising an output drum and a take-up drum, a winding spring having a stretched S-shaped form disposed between said output drum and said take-up drum, said winding spring having a normal use region made up of a portion of the entire length of the winding spring, the natural radius of curvature of the spring in said normal use region being gradually increased in the direction of the take-up drum, said spring having a surplus use region, the natural radius of curvature of the spring in the surplus use region being divided into a first part which in the direction of the take-up drum gradually decreases and a second part which is constant, and said spring having a free end portion, the natural radius of curvature of the free end portion of the winding spring being disposed on the take-up drum, the natural radius portion of the free end portion being greater than that of the first part or second part.

4,253,621
VEHICLE-SENSITIVE BLOCKING DEVICE

Holger Seel, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,267
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802030
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **10 Claims**



1. A vehicle-sensitive device for automatic belt reeling mechanisms of motor vehicle safety belts, which device comprises:

a housing;

a belt reel rotatably journalled to said housing and a toothed cogwheel connected to said reel for rotation therewith;

a carrier attached to said housing;

an inertia sensor displaceably held on said carrier;

a pawl pivotally mounted on said carrier and pivotable by movement of said inertia sensor, said pawl having notch means as a rated breaking point so that said pawl can exist in an undamaged state, and in a broken state in which that end of said pawl beyond said rated breaking point and remote from said pivot point is broken off;

a first stop, for engaging said cogwheel, located on that end of said pawl remote from the pivot point of said pawl and beyond said rated breaking point;

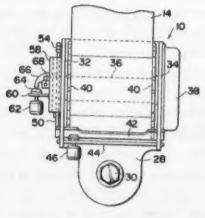
a second stop forming a part of said pawl and located near said rated breaking point on that part of said pawl remaining in said broken state, said second stop being engageable with said cogwheel; and

means for holding said second stop in engagement with said cogwheel for blocking reel unwinding rotation.

4,253,622
WEBBING RETRACTOR

Shuho Nishina, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 1, 1979, Ser. No. 90,402
Claims priority, application Japan, Nov. 13, 1978, 53-155887[U]
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **9 Claims**



1. A webbing retractor for receiving an occupant restraining webbing in a seatbelt system for protecting an occupant in an emergency of a vehicle, comprising:

(a) a windup shaft for winding up the occupant restraining webbing;

(b) a pawl for being tilted in an emergency of the vehicle, meshing with the windup shaft and preventing the webbing windoff rotation of the windup shaft, whereby the occupant is restrained by the webbing;

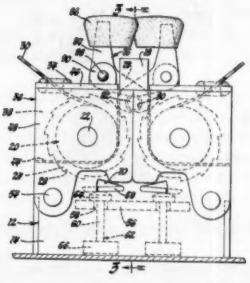
(c) a release lever for abutting against and moving said pawl to be released from said meshing with the windup shaft, whereby the webbing windoff rotation of the windup shaft is made possible to unfasten the occupant; and

(d) a holding device for abutting against the release lever to automatically hold a condition where said release lever has moved the pawl to be separated from the ratchet wheel when the vehicle is tilted.

4,253,623
LOCKBAR RELEASE FOR INERTIA LOCKING SEAT BELT RETRACTOR

Charles B. Steger, Warren, and Kenneth H. Reid, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1979, Ser. No. 93,936
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **2 Claims**



1. In a seat belt retractor having a housing, a belt reel journaled for belt winding and unwinding rotation, a ratchet plate carried by the reel, and a lockbar selectively movable relative the housing between a locking position engaging the ratchet plate to lock the reel against belt unwinding rotation and an unlocking position disengaged from the ratchet plate to permit belt unwinding reel rotation, the improvement comprising:

a support member having the reel rotatably journaled thereon;

pivot means mounting the support member on the frame, and being spaced from the reel shaft to permit arcuate movement of the reel about the pivot means;

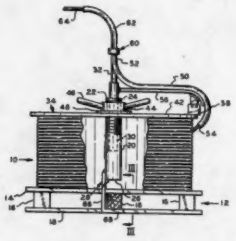
latch means acting between the support member and the housing to normally latch the support member at a position establishing the ratchet plate of the reel in proximity with the lockbar for selective locking engagement by the lockbar;

and means operable to unlatch the latch means whereby occupant restraining belt load acting on the reel urges arcuate movement of the support member and reel about the pivot means and away from proximity with the lockbar to permit belt unwinding reel rotation irrespective of the lockbar being located at the locking position.

4,253,624
WELDING WIRE DISPENSER

Robert E. Colbert, 3843 E. Walmont, Jackson, Mich. 49203

Continuation of Ser. No. 2,231, Jan. 10, 1979, abandoned. This application Apr. 7, 1980, Ser. No. 137,839
Int. Cl.[3] B65H *49/00*
U.S. Cl. 242—128 10 Claims

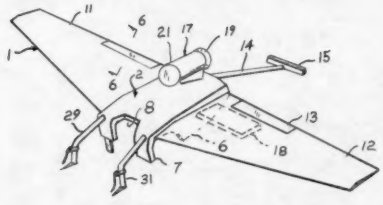


1. A dispenser for coiled welding wire supported upon a pallet having a plurality of spaced support slats affixed to a transversely disposed base element, comprising in combination, a column having a lower end and an upper end, a cover member mounted upon the column upper end adapted to engage and overlie the upper end of a coil of wire supported on the pallet, first connection means defined on said column upper end, second connection means cooperating with said first connection means axially displacing said cover on said column toward the pallet producing a vertical upward force on said column, rotatable wire guide means mounted on said column upper end for dispensing wire from the coil, and pallet attachment means defined upon said column lower end adapted to extend under pallet structure whereby operation of said first and second connection means fixes said column relative to the pallet and wire coil.

4,253,625
AIRCRAFT ATTACHABLE TO THE BODY OF A PILOT

Igor Dmitrowsky, 92-36 54th Ave., Elmhurst, N.Y. 11373

Filed Sep. 10, 1979, Ser. No. 74,001
Int. Cl.[3] B69C *39/00*
U.S. Cl. 244—4 A 3 Claims

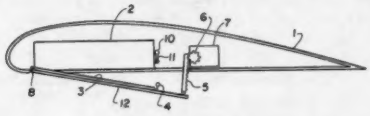


2. An aircraft attachable to the body of a pilot, comprising a saddle mountable to the back of the pilot; a pair of shoulder elements depending from a forward end of the saddle, one of the elements being adapted to overlie a left shoulder of the pilot and the other element being adapted to overlie a right shoulder of the pilot; a pair of wing sections, one of the sections extending off a left side of the saddle and the other section extending off a right side of the saddle; strap elements carried by the saddle adapted to be engaged about the body of the pilot for securing the saddle to the back of the pilot; a tail stick extending rearwardly from a rear central end of the saddle having a crosspiece at its rear, the tail stick being adapted to be received between the legs of the pilot, and the crosspiece being adapted to serve as a rest for the feet of the pilot; a pair of handles extending forwardly from the saddle terminating in a pair of handgrips manually engageable by the pilot; manipulative control means carried by the handgrips; a separate aileron mounted in each wing section, and a separate aileron actuating control cable associating each aileron with the manipulative control means; a jet fuel engine mounted atop the saddle for powering the aircraft in flight; the engine having a rearwardly extending exhaust tube; flight direction control means associated with the exhaust tube for causing escape of exhaust gases from the exhaust tube in selective directions; and means associating the flight direction control means with one of the handgrips for manipulation by the pilot.

4,253,626
EMERGENCY FUEL DUMP DEVICE FOR AIRCRAFT

Ralph P. Muscatell, 2007 NE. 20th Ave., Fort Lauderdale, Fla. 33305

Filed Oct. 3, 1978, Ser. No. 948,144
Int. Cl.[2] B64D *37/20*
U.S. Cl. 244—135 R 1 Claim

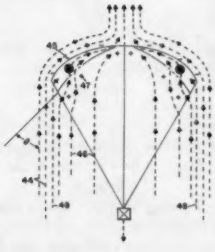


1. A wing-fuel tank assembly comprising a bottom surface which forms the bottom of the tank and part of the underside exterior of said wing, said bottom surface being connected to a forward portion of said tank by a continuous hinge and arranged such that it swings downwardly into the airstream upon opening; said bottom surface having at least one eyelet along its rearward edge which mates with at least one eyelet affixed to the rear of said tank; a latch means in the form of a pin passing through said eyelets securing said bottom surface to said tank; means for removing said pin to release said bottom surface; motor and gear means attached to said wing rearwardly of said tank and said gear means mating with further gear means on a bar attached to said bottom surface for moving said bottom surface downwardly to open said tank and dump said fuel and moving upwardly to close said tank thus providing a continuous underside of the exterior of said wing after dumping of said fuel.

4,253,627
MULTI-LAYER RAM AIR PARACHUTE CANOPY

Jon T. Matsuo, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1979, Ser. No. 70,239
Int. Cl.[3] B64D *17/04, 17/18*
U.S. Cl. 244—145 4 Claims



1. A parachute for variably decelerating a connected load comprising:

a flexible, dome-shaped canopy having upper and lower circular, concentric canopy membranes,

each said membrane having a hem around the outer edge thereof and an apex with an air vent at the center thereof, said air vents being of equal size;

a plurality of suspension lines connected between said canopy hems and said load;

a plurality of radially extending and circumferentially spaced ribs connecting said upper and lower membranes in spaced relation thereto and forming a plurality of airfoil-shaped ram air cells therebetween;

each said cell having a ram air inlet port at said hem and a ram air exhaust port at said apex air vents and diminishing in cross-sectional area from said hem to said apex;

means for simultaneously varying the airflow through and the camber of said airfoil-shaped ram air cells attached to said apex;

each of said ribs having a porous section made of a mesh-like material therein for the passage of air therebetween to equalize the air pressure between adjacent cells;

said lower canopy membrane having a porous section at each said airfoil-shaped ram air cell to allow the passage of air pressure under the canopy to enter said airfoil-shaped ram air cell;

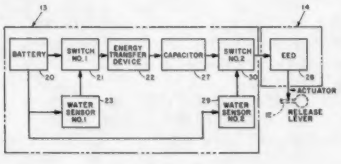
whereby a maximum retardation force on said parachute is achieved during descent.

4,253,628

AUTOMATIC PARACHUTE RELEASE SYSTEM

Albert J. Marek, Dallas, Tex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1979, Ser. No. 91,224
Int. Cl.³ B64D *17/30*
U.S. Cl. 244—151 A **10 Claims**



1. A control circuit for firing an electrical explosive device whose explosive force disengages a release lever of a parachute buckle from a parachute strap comprising in combination

a pair of water sensors;

a storage capacitor;

means for charging said storage capacitor in response to the immersion of one of said sensors in sea water;

an electrical explosive device; and

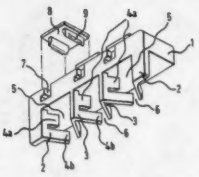
means for discharging said storage capacitor through said electrical explosive device in response to the immersion of the other sensor in sea water and only when the voltage across said storage capacitor has a preselected magnitude, the discharge current of said storage capacitor being sufficient to fire said electrical explosive device.

4,253,629

GUIDING AND MARKING MEMBER FOR ELECTRICAL CABLES

Manfred Wilmes, Detmold, Fed. Rep. of Germany, assignor to C.A. Weidmüller KG, Detmold, Fed. Rep. of Germany

Filed Jun. 21, 1979, Ser. No. 50,850
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 7826230[U]
Int. Cl.³ F16L *3/22*
U.S. Cl. 248—68 R **3 Claims**



1. A guiding and marking member adapted to be clipped onto one or more electrical cables, said member comprising

(a) a support plate;

(b) a plurality of posts on said support plate and generally perpendicular to a face of said support plate;

(c) each post having resilient lateral projections extending adjacent to said face and having free tips;

(d) respective said projections of adjacent posts converging in the direction of their said free tips and defining between said free tips

(i) a slit for insertion of a cable, and

(ii) an aperture, wider than and communicating with said slit, and located between the latter and said face, for holding an inserted cable;

(e) each said post having at least one longer first projection for defining a respective slit and at least one shorter second projection between said first projection and said face for defining a respective cable-holding aperture;

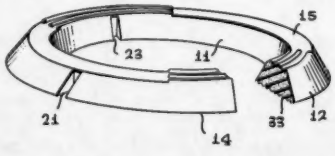
(f) said shorter second projection being flexible independently of said longer first projection.

4,253,630

PERSONALLY PORTABLE HELMET REST

Dale L. Rigg, 12300 Sherman Way, Apt. C1, North Hollywood, Calif. 91605

Filed Jul. 21, 1978, Ser. No. 926,654
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—346 **3 Claims**



1. A portable stabilizing rest for retaining and supporting on a surface a rigid safety helmet or the like having a convex outer shell, said rest comprising:

a flexible, resilient, normally annular body of generally trapezoidal cross-section, having a top, a bottom, and upwardly converging outer and inner walls; and

a first pair of diametrically opposed radial slits formed in said outer wall, extending from the top to the bottom of said body, whereby said body is readily deformed by the weight of such helmet for conforming contact between the outer shell of the helmet and the top of said body, and

between the bottom of said body and the supporting surface.

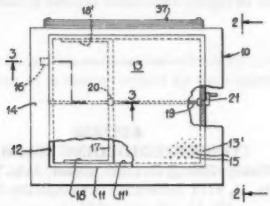
4,253,631
MOUNTING MEMBER FOR VACUUM PRODUCTION OF PRINTSHOP PASTE-UPS

Paul L. Sherman, and Kay Sherman, both of 5 Western Pl., East Brunswick, N.J. 08816

Division of Ser. No. 766,604, Feb. 7, 1977, which is a continuation of Ser. No. 586,900, Jun. 16, 1975, abandoned. This application Jul. 31, 1978, Ser. No. 929,454

Int. Cl.[3] **A45D** *42/14*

U.S. Cl. 248—363 **3 Claims**



1. The combination of a mounting member for producing printshop paste-ups and a work surface comprising a vacuum table having, throughout the surface thereof, a grid of small, uniformly spaced air passage apertures communicating with a vacuum chamber within said table, said mounting member being a one-use expendable component, one being used to produce each paste-up, and comprising a thin rectangular sheet of material having a grid of apertures throughout the major portion of its surface for alignment with air passage apertures in the vacuum table providing said work surface and a narrow imperforated border along the four sides thereof, said border being of a width to overlie two rows of air passage apertures thereby serving to position the mounting member on the vacuum table, and the size of apertures in the mounting member being 1.5 to 2 times larger than the apertures in said vacuum table and effective to provide suction for holding bits and pieces of text and illustrative sheet material in place on the mounting member during arranging and rearranging of such bits and pieces to achieve desired composition in the paste-up, and until the properly composed paste-up has been covered by a transparent adherent sheet coextensive with said mounting member.

4,253,632
BASE PORTION FOR TILTABLE CHAIR

Frank Doerner, 138 Aberdeen Rd., Kitchener, Ontario, Canada (N2M 2Y7)

Continuation-in-part of Ser. No. 803,963, Jun. 6, 1977, abandoned. This application Sep. 11, 1978, Ser. No. 941,008

Claims priority, application Canada, Apr. 21, 1978, 301702

Int. Cl.[3] **F16M** *11/00*

U.S. Cl. 248—405 **13 Claims**

1. A base portion for a tiltable chair, said portion comprising:

(a) a chair control adapted to control the tilting of said chair;

(b) a threaded cylindrical post secured to said chair control and extending vertically downward;

(c) an outer, vertically aligned tubular sleeve around said cylindrical post;

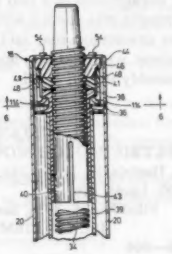
(d) a bell assembly mounted on said cylindrical post above said tubular sleeve, said assembly adapted to control the height of said chair;

(e) an alignment means adapted to align said tubular sleeve in a vertical position relative to said cylindrical post, said alignment means mounted on said cylindrical post inside said tubular sleeve, said alignment means comprising:

(i) a first inner resilient, plastic tubular sleeve mounted on said cylindrical post;

(ii) a second inner tubular sleeve mounted on said first inner tubular sleeve;

said first inner sleeve having an integral circular flange marginally below the top surface thereof, the diameter of said flange being less than the diameter of said outer tubular sleeve, and a circumferential lip around the top portion of said first inner sleeve and integral



therewith, and a pair of diametrically opposed slots cut into the side wall of said first inner sleeve and extending upwards approximately one-half the length of said sleeve;

said second sleeve mounted on said first inner sleeve and extending from immediately below said circular flange to the bottom of said cylindrical post;

(f) a plurality of radially extending legs adapted to support said chair, the inner ends of said legs being secured to the lower portion of said second inner sleeve.

4,253,633
MOUNTING OF OUTSIDE REAR VIEW MIRROR ON MOTOR VEHICLE BODY

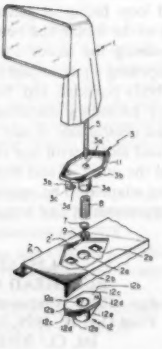
Tetuo Takegawa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 22, 1979, Ser. No. 51,134

Claims priority, application Japan, Jun. 27, 1978, 53-87479

Int. Cl.[3] **F16C** *1/10;* **A47F** *7/14*

U.S. Cl. 248—475 B **5 Claims**



1. A motor vehicle comprising:

an outside rear view mirror assembly comprising a stud, a mirror mounting body pivotally connected at a bottom end portion to one end of said stud, a platy base member having an aperture through which extends said stud, and means for resiliently coupling said stud with said base member such that said mirror mounting body rests on a top side of said base member and is biased toward said

base member, said base member having two angled hooks projecting from a bottom side in an opposite arrangement with respect to said stud;

a vehicle body panel on which is placed said base member of said assembly, said panel being formed with a first aperture through which extends said stud and two second apertures through which protrude said two hooks, respectively, from the inside of said panel; and

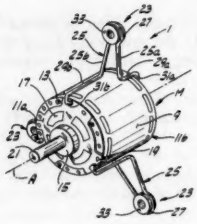
a clip which has two claw portions shaped and arranged to tightly engage with said two hooks, respectively and has been brought into contact with the inside of said panel in such an orientation that said two claw portions are in engagement with said two hooks, respectively, to secure said assembly to said panel.

4,253,634

ELECTRIC MOTOR MOUNTING SYSTEM

Nicholas R. Daniels, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 5, 1978, Ser. No. 939,336
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—604 **34 Claims**



1. A system for mounting an electric motor or the like to a support, said motor having a central longitudinal axis extending in fore and aft direction, said motor having a plurality of apertures therein, said mounting means comprising a plurality of brackets adapted to be secured to said motor at intervals spaced therearound, each of said brackets being formed of relatively stiff wire or the like and having a portion extending outwardly from said motor and a loop at the outer end of the bracket, said loop facing in generally fore and aft direction with respect to the motor and being adapted to receive a fastener for securing the motor to said support, each of said brackets comprising a pair of said body portions with said loop joining said body portions, and, further, each of said brackets having a foot extending therefrom in a direction generally parallel to said central axis of said motor when said bracket is installed on said motor with one of said feet extending in fore direction and the other of said feet extending in aft direction, said feet being adapted to be received in said apertures in said motor for securement of said bracket to the motor.

4,253,635

BULKHEAD BRACE

Kermit J. Rodger, 18003 Wentworth Ave., Lansing, Ill. 60438

Filed Oct. 11, 1979, Ser. No. 83,760
Int. Cl.³ B28B *7/04*
U.S. Cl. 249—47 **5 Claims**

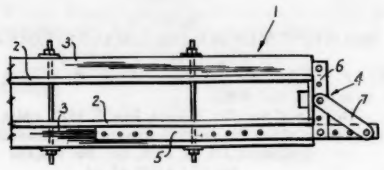
1. A wall form system for supporting the end of a concrete mold comprising;

a wall form,

said wall form having a pair of parallel first and second side walls and at least one end wall,

waler beams on said first and second side walls, a first means affixed to said waler beam on said first side wall for securing the first side wall,

a second means secured to said first means for securing said end wall between said side walls, and



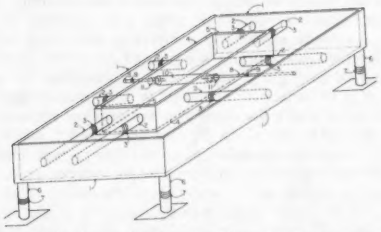
a third means fastened to said first means and said second means to rigidly brace said second means.

4,253,636

CONCRETE MOLDING MACHINE

Clyde C. Grady, Rte. 2, Box 155, Cabot, Ark. 72023, and Clyde C. Grady, II, 9771 Jefferson Hwy., Apt. 20, Baton Rouge, La. 70809

Filed Jan. 15, 1979, Ser. No. 3,723
Int. Cl.³ B28B *7/18;* B29C *3/00, 3/02*
U.S. Cl. 249—139 **3 Claims**



1. A machine for making cementitious products comprising an outer frame enclosing a space and having upright sides, said frame being supported on pedestals such that a bottom plate may be brought into contact with the mold sections, mold sections for forming the side walls of the product, and substantially horizontal support arms each attached to the outer frame and supporting a mold section in the enclosed space, said support arms being capable of extension and retraction whereby the mold sections may be assembled and disassembled.

4,253,637

DEVICE FOR MOLDING STRUCTURAL ELEMENTS OF TOYS

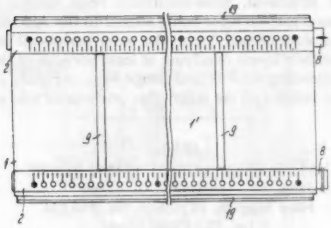
Hannelore Rosbach, Karl Spitta Strasse 2, 8430 Neumarkt Opf., Fed. Rep. of Germany

Filed Mar. 20, 1980, Ser. No. 131,892
Claims priority, application European Pat. Off., Dec. 10, 1979, 79105018.0
Int. Cl.³ B28B *7/02*
U.S. Cl. 249—158 **13 Claims**

1. A device for molding toy structural elements from hardenable or polymerizable materials, comprising:

a base plate with clamping rails thereon arranged parallel to and spaced from each other, means releasably holding said

rails to said base plate in selected positions in a fixed manner, and a plurality of end molding pieces placed



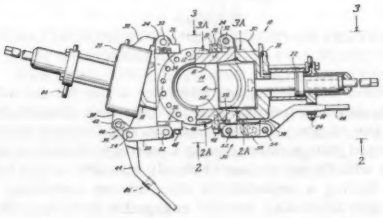
freely on the base plate and secured releasably to said base plate by means of pressure thereon by the clamping rails.

4,253,638

BLOWOUT PREVENTER

John N. Troxell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 2, 1979, Ser. No. 63,156
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 A **4 Claims**



1. A blowout preventer comprising

a body having a central bore and opposed guideways intersecting said bore,

a ram assembly slidable in each of said guideways,

a pair of bonnets,

means for pivotally mounting each of said bonnets to said body whereby in one position said bonnet covers its guideway and in the other position said bonnet pivots away from the guideway to provide access to the interior of the bonnet and the guideway,

a latch for securing each of said bonnets in position covering its guideway,

means connecting said pivotal mounting means and said latches to said body,

said connecting means being adjustable to assure that the mating faces of said bonnets and said body are parallel and a tight fit when said bonnet is closed.

4,253,639

DISTRIBUTOR DEVICE FOR HYDRAULIC CIRCUITS

Carlo F. Cecchi, Turin, and Rino O. Barbagli, Borgaretto, both of Italy, assignors to Fiat-Allis Macchine Movimento Terra S.p.A., Lecce, Italy

Continuation of Ser. No. 906,470, May 17, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,409
Int. Cl.³ F16K *31/12, 31/44*
U.S. Cl. 251—44 **8 Claims**

1. A hydraulic circuit control system for effecting fluid communication between a source of fluid pressure and apparatus actuable in response to the presence of fluid pressure comprising

a control lever actuable into a position for effecting actuation of apparatus actuable in response to the presence of fluid pressure,

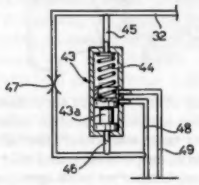
valve means operatively connected to said control lever and movable in response to actuation thereof for effecting fluid communication between a source of fluid pressure and apparatus actuable in response to the presence of fluid pressure,

cam means operatively connected to said control lever and interposed for rotational movement between said control lever and said valve means for effecting movement of said valve means in response to actuation of said control lever, said cam means having at least a first control surface,

said at least first control surface operatively coupled to said valve means to move said valve means in response to the control surface thereof,

distribution means operatively coupled to said valve means and responsive to said fluid communication for actuating the apparatus actuable in response to the presence of fluid pressure,

said distribution means including means to create a pressure differential in response to said fluid communication,



said distribution means further including a control member movable from a first position to a second position in response to said pressure differential for actuating the apparatus actuable in response to the pressure of fluid,

said means to create a pressure differential including conduit means in fluid communication across said control member and valved by said valve means,

first and second fluid conduits in fluid communication with said distribution means, said first fluid conduit including a first fluid conduit portion in communication with said means to create said pressure differential and further including a portion in communication with a portion of said control member and

said control member acting to block fluid communication between said first and second fluid conduits in said first position and acting to effect fluid communication between said first and second conduits in said second position for actuating the apparatus, said valve means operable by said cam means to create said pressure differential to move said control member from said first to said second position.

4,253,640

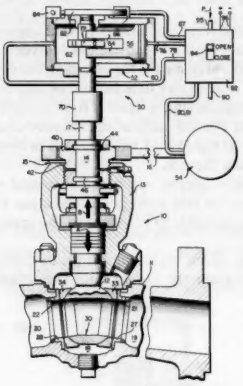
ACTUATION SYSTEM FOR VALVE WITH COMPOUND CLOSURE MOVEMENT

Werner K. Priese, Barrington, and Charles I. Koehlert, Dundee, both of Ill., assignors to Hills-McCanna Company, Carpentersville, Ill.

Filed Mar. 14, 1979, Ser. No. 20,324
Int. Cl.³ F16K *31/04, 31/122*
U.S. Cl. 251—56 **12 Claims**

9. An actuation system for a valve having a compound movement requiring actuation in a predetermined sequence of at least two independent valve control members to achieve either opening or closing of the valve, said actuation system comprising: first and second actuator means for respectively actuating said two independent valve control members, electrically energizable actuator control means for controlling the operation of said first and second actuator means, master control means actuatable by an operator to an open position and to

a close position, and electrical control circuit means responsive to said operator actuatable master control means for energizing said electrically energizable actuator control means in a predetermined fashion so as to automatically achieve said predetermined sequence of actuation of said valve control members for



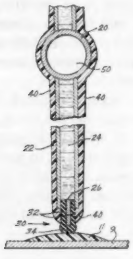
opening and closing of the valve in accordance with the position of the operator actuatable control means, wherein said first actuator means raises and lowers the valve member from and to a seal position, respectively, and said second actuator means rotates the valve member to an open and close position.

4,253,641

BUTTERFLY VALVE AND PERIMETER SEAL

Theodore H. VanRyck, 710 Claremont St., Tacoma, Wash. 98466

Filed Dec. 7, 1978, Ser. No. 967,356
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—306 **13 Claims**



1. In a butterfly valve including a tubular valve housing having an interior annular seat, an improved closure plate and seal comprising:

a disc shaped frame rotatably mounted in said housing about an axis substantially coincident with a diameter of said frame; said frame being rotatable between open and closed positions,

an annular flange affixed to and extending radially outwardly from said frame so that the outer peripheral edge of said flange is adjacent the annular seat when said frame is in the closed position, said annular flange having sides extending from the outer peripheral edge of said flange radially inwardly relative to said frame,

a resilient, elastomeric seal affixed to and extending radially outwardly from said flange sufficiently far to be resiliently compressed against said seat when said frame is in the closed position, said seal being a layer of resilient elastomeric material affixed to the sides of and extending continuously around the outer peripheral edge of said flange, said seal having inner edge portions contiguous with the sides of said flange, and

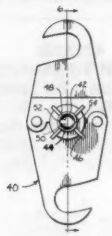
separate structural, glass-reinforced resin surface layers, each said surface layer being affixed to the opposite disc-shaped sides of said frame, the outer peripheral edges of said surface layers overlying at least portions of the radially extending sides of said flange so as to rigidly overlay and be bonded to the inner edge portions of said seal.

4,253,642

VALVE STEM LUBRICATING PLATE

Harold R. Adams, St. Francisville, Ill. 62460

Filed May 26, 1978, Ser. No. 910,134
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—355 **3 Claims**



1. A valve stem cleaner and lubricator device for use with valves having an exposed threaded valve stem situated between a pair of elongated yoke elements, said device comprising a hinged plate member having a pair of half sections engageable with the valve stem to closely surround it, said half sections having a semi-circular compartment containing a packing and lubricating material engageable with the valve stem to provide a cleaning and lubricating function and means for engaging said plate member to said yoke elements, said means comprising arcuate slots in said half sections for receiving said yoke elements and means for locking said half sections together in a valve stem engaging position and wire brush means provided to clean the threads of the valve stem, said means comprising semi-circular support members supported on each of said aforementioned half sections and including means on each of said respective half sections to support said support members thereabove, each of said support members being provided with inwardly extending wire brush elements adapted to engage said threads when the cleaner and lubricator device is closed on the valve stem in said engaging position and wherein said valve stem is lubricated and cleaned by said plate member and brush means of said valve stem.

4,253,643

ESCAPE DEVICE

Glen R. Forester, 21296 - 8 Ave., Langley, British Columbia, and Arnold M. Bernard, 1207 - 4758 Grange St., Burnaby, British Columbia, both of Canada

Filed Apr. 23, 1979, Ser. No. 32,514
Int. Cl.³ B66D *1/00*
U.S. Cl. 182—239 **3 Claims**

1. A fire escape device comprising:

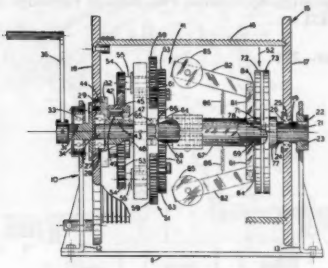
(a) a supporting frame having a pair of spaced apart support members,

(b) a shaft non-rotatably mounted at one end in one of the support members,

(c) a winding drum rotatably mounted on the shaft and adapted to have a cable wound thereon,

(d) a stub shaft extending from one end of the drum rotatably supported by the other support member of the frame,

(e) a first friction plate mounted on the shaft against rotative and linear movement,
(f) a tubular governor carrier mounted for rotation on the shaft,
(g) gear means connecting the drum in driving engagement with the carrier,



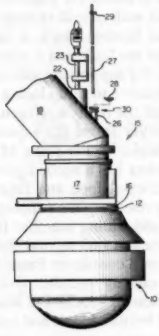
(h) a second friction plate mounted on the carrier for rotation therewith and longitudinally slidable thereof,
(i) centrifugally actuated governor means mounted on the governor carrier for moving the second friction plate into engagement with the first friction plate so as to apply a braking force to the winding drum as the latter rotates.

4,253,644

FLUID CLOSURE FOR AND METHOD OF PREVENTING FLOW THROUGH AN OPENING IN A FLUID AND PARTICULATE CONFINING AND CONVEYING STRUCTURE

John M. Marshall, Crown Point; Timothy A. Veslocki, Highland, both of Ind., and James J. Sulicz, Calumet City, Ill., assignors to Inland Steel Company, Chicago, Ill.

Filed Dec. 4, 1978, Ser. No. 966,085
Int. Cl.³ C21C 5/42
U.S. Cl. 266—44 **22 Claims**



1. In a structure for confining and conveying a fluid and having an opening therein communicating with the interior of said structure, a fluid closure for preventing fluid from flowing through said opening comprising means defining an uninterrupted orifice extending around the periphery of the opening in said fluid confining structure and operable to direct fluid radially inwardly toward the center of said opening, said orifice being defined by a gap between a pair of substantially parallel, spaced surfaces, and means for supplying fluid under pressure to said orifice to create a continuous fluid curtain across said opening, whereby said fluid curtain prevents particulate material and fluids from flowing through said opening when said curtain is established.

15. In a hood structure adapted to receive gases and particulate material discharging from the mouth of an oxygen steelmaking furnace when the latter is in operation so as to prevent said gases and particulate material from escaping to the atmosphere, said hood structure including a port through which a temperature sensing lance may be inserted to monitor the temperature of the contents of said furnace when the latter is in operation, the improvement of a fluid closure for preventing gases and particulate material from escaping to the atmosphere through said port when the latter is uncovered to permit insertion or removal of said lance, said fluid closure comprising means defining an uninterrupted orifice around the periphery of said port for directing fluid toward the center of said port in a continuous fluid curtain, said orifice being defined by a gap between a pair of substantially parallel, spaced surfaces, and means for supplying fluid under pressure to said orifice to create said curtain, whereby said fluid curtain prevents gases and particulate material from escaping to the atmosphere when fluid under pressure is being supplied to said orifice and said curtain is established.

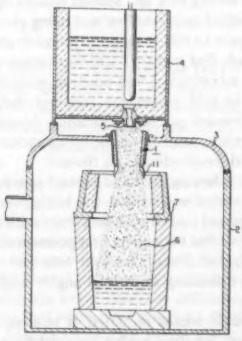
20. In a method of preventing gases and particulate material from escaping to the atmosphere through a port in a hood for an oxygen steelmaking furnace when the latter is in operation, the improvement comprising the steps of forming a generally annular nozzle having an inner periphery having an uninterrupted orifice therein, said uninterrupted orifice being provided by an uninterrupted gag between a pair of substantially parallel, spaced surfaces in said inner periphery, mounting said nozzle on said hood so that said nozzle circumscribes said port and said orifice directs fluid radially inwardly toward the center of said port from said uninterrupted gap, and supplying fluid under pressure to said uninterrupted gap so as to maintain a continuous fluid curtain across said port.

4,253,645

MOLTEN STEEL DROPLET SCATTER REGULATION CYLINDER

Kenji Maeda; Yoshiyuki Iwanami, and Masaru Fukumoto, all of Muroran, Japan, assignors to The Japan Steel Works, Ltd., Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,545
Claims priority, application Japan, Feb. 7, 1978, 53-11967
Int. Cl.³ C21C 7/10
U.S. Cl. 266—211 **3 Claims**



1. In a molten steel droplet scatter regulation cylinder for use in a vacuum steel casting system comprising a hollow element made of a high alumina refractory material and means by which said hollow element is mounted on the lid of a vacuum chamber within which is placed a mold into which molten steel is poured, the improvement wherein at least the lower end portion of said hollow element is comprised of a refractory material which does not substantially wet molten steel selected from the group consisting of graphite, silicon carbide, carbon-

containing refractory material and a carbide-containing refractory material.

4,253,646

HOT BLAST-FURNACE-LINING REPAIRING APPARATUS

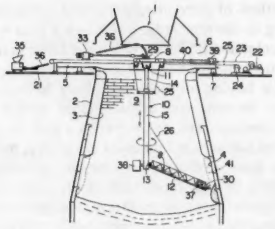
Kanji Goto, Kamaishi; Tiyomi Yamaguti, Sakuragi; Yorihito Mikami, and Rokuro Komakine, both of Kamaishi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,672

Claims priority, application Japan, Oct. 9, 1978, 53/123567; Oct. 9, 1978, 53/123568

Int. Cl.³ C21B *7/04*

U.S. Cl. 266—281 **14 Claims**



1. An apparatus for hot repairing a damaged portion of a lining of a blast furnace with the charge of the blast furnace lowered below the damaged portion, said apparatus comprising:

support member means adapted to be supported by a working floor exterior of a blast furnace at a position adjacent the top thereof;

a suspension member supported by said support member means to extend horizontally and adapted to be extended thereby through an opening in the top of the blast furnace so that said suspension member is positioned within the blast furnace;

a first arm having first and second spaced opposite ends and a longitudinal axis, said first end being pivotally connected with respect to said suspension member about a horizontal pivot, such that said first arm is rotatable about said pivot between a horizontal first position extending substantially parallel to said suspension member and a substantially vertical second position extending downwardly into the blast furnace, said first arm being mounted for rotation about said longitudinal axis thereof;

a second arm having first and second spaced opposite ends, said first end of said second arm being pivotally connected to said second end of said first arm, such that said second arm is pivotable between a first position extending parallel to and folded along said first arm and selected second positions extending at desired angles with respect to said first arm;

gunning nozzle means mounted at said second end of said second arm for discharging material for repairing a damaged portion of the blast furnace;

rotating means for rotating said first arm about said longitudinal axis thereof;

first drive means for moving said first arm between said first and second positions thereof;

second drive means for moving said second arm between said first and second positions thereof; and

supply means for supplying repair material from a position exterior of the blast furnace to said nozzle means.

4,253,647

SLIDE GATE NOZZLE FOR LADLES

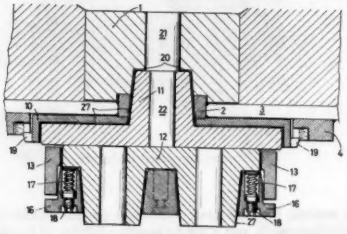
Adolf Andres, Schwalbach, Fed. Rep. of Germany, assignor to Stahlwerke Röchling-Burbach Gesellschaft mit beschränkter Haftung, Völklingen-Saar, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,314

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840171

Int. Cl.³ C21C *5/48*

U.S. Cl. 266—271 **7 Claims**



1. A closure arrangement for a ladle which enables molten metal in the ladle to be discharged from the bottom of the ladle, the bottom of the ladle extending in a given plane, comprising a bottom block extending through the bottom of the ladle, said bottom block having an aperture for discharging molten metal in the ladle, a refractory closing member having a first planar sealing surface which is generally kidney-shaped, said closing member has a wall the outer surface of which extends generally conically from said first sealing surface, and an aperture in alignment with the aperture in said bottom block for discharging the molten metal, a drawing off plate fixed below said bottom block and in engagement with said closing member in the region of said first sealing surface for seating said closing member so that said first sealing surface faces away from said bottom block and extends in a plane parallel to the bottom of the ladle, a centering ring fixed between said bottom block and said drawing off plate for guiding said closing member so that said wall of said closing member extends at least partially into said bottom block, a cantilever frame arranged at the bottom of the ladle and a pivot pin fixed beneath the bottom of the ladle for supporting said cantilever frame for swinging movement relative to said closing member in a plane parallel to the bottom of the ladle, a refractory sliding member mounted in said cantilever frame for adjustable movement in the direction perpendicular to the plane of the bottom of the ladle, said sliding member has a second planar sealing surface which is generally kidney-shaped and faces toward said first sealing surface, and a pressure plate supported on said cantilever frame for urging said sliding member toward said closing member so that said first and said second sealing surfaces are in sealing relationship as said cantilever frame swings said sliding member against said closing member over a certain range wherein said sliding member blocks the discharge of the molten metal through said bottom block and said closing member.

4,253,648

ADJUSTABLE OFF-SET SPRING LOADED CLAMP AND STAND

Charles H. Meeks, 25907 Belle Porte Ave., Harbor City, Calif. 90710

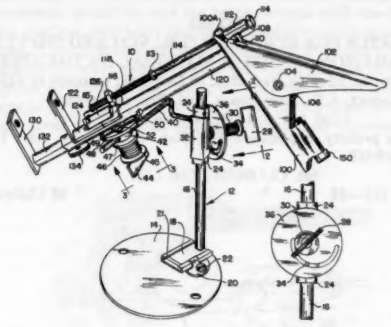
Filed Nov. 23, 1979, Ser. No. 96,930

Int. Cl.³ B25B *1/24*

U.S. Cl. 269—4 **15 Claims**

1. An adjustable off-set clamp assembly comprising: a first shaft; a first jaw attached to one end of the first shaft; a first handle attached to the other end of the first shaft; a second handle pivotally coupled to the first handle; spring means resiliently biasing the handles in opposite directions about a

pivot axis; a second shaft coaxial with and slidable on said first shaft; means including an elongated member coupling the



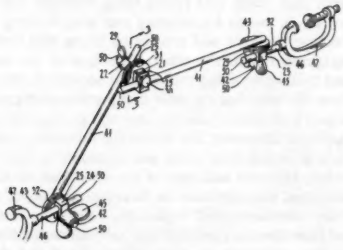
second shaft to the second handle; and a second jaw attached to the end of the second shaft to be supported thereby in spaced relationship with the first jaw.

4,253,649

ADJUSTABLE WORK POSITIONING TOOL

Andrew J. Hewson, 1109 Sydney Rd., Coburg, 3058, Victoria, Australia

Filed Oct. 24, 1979, Ser. No. 88,092
Claims priority, application Australia, Oct. 30, 1978, PD6576
Int. Cl.[3] B25B *1/22*
U.S. Cl. 269—45 **7 Claims**



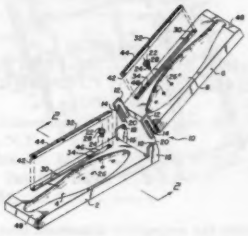
1. A tool comprising clamp means and a joint, said joint comprising a first body to which the clamp means is secured and a second body, means mounting the first and second body for relative rotation about an axis and for forcing the first and second bodies towards one another, a disc carried by each of the first and second bodies, said discs being axially disposed with respect to one another, a resilient friction member sandwiched between the discs, and wherein the discs are spot welded to the respective one of the first and second bodies and have a depression therein formed by the spot welding adjacent the friction member said depression being spaced from the axis of rotation of said first and second bodies and coacting with said friction member to prevent relative rotation of said first and second bodies.

4,253,650

HERRING STRIP CUTTER

Steven K. Kuzio, 1748 E. 64th Ave., Vancouver, British Columbia, Canada (V5P 2M8)

Continuation-in-part of Ser. No. 17,586, Mar. 5, 1979, Pat. No. 4,205,832. This application Apr. 21, 1980, Ser. No. 142,138
Int. Cl.[3] A22C *25/00*
U.S. Cl. 269—87.2 **7 Claims**



1. A device for holding bait fish to permit cutting a strip from the side of the fish, the device comprising:

a holding block having opposed sides and opposed faces;

a first depression formed in the first face of the holding block to hold a fish with a side of the fish protruding;

a clamping plate having opposed sides and opposed faces;

a second depression formed in a first face of the clamping plate;

the first and second depressions being correspondingly shaped to hold opposed sides of a bait fish;

a pivotal joint between the holding block and the clamping plate, said joint being adapted to permit variable spacing between the holding block and the clamping plate;

spikes in the first and second depressions to engage and assist in locating a fish held between the holding block and the clamping plate;

one slot formed longitudinally in each of the holding block and the clamping plate;

a guide block for a knife blade positionable within each slot; and

means to enable control of the projection of each guide block from each channel to control the thickness of the strip cut.

4,253,651

DOCUMENT INTERLEAVER DEVICE

George P. McInerny, Andalusia, Pa., and Aaron F. Parker, Elm, N.J., assignors to Technitrol, Inc., Philadelphia, Pa.

Filed Jan. 30, 1979, Ser. No. 7,928
Int. Cl.[3] B65H *39/04*
U.S. Cl. 270—58 **24 Claims**

1. A device for interleaving documents comprising:

separate document bins for receiving stacks of each of the documents to be interleaved;

a common collection bin;

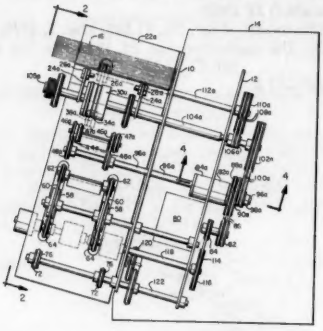
means defining separate document feed paths from each of the document bins to a merged feed path connecting the separate feed paths to the common collection bin, each of the respective feed paths having at least single sheet counter-rotating friction separation means along its feed path;

document sensing means along each of the document feed paths after the document separation means to detect a document after it has passed through the single document separation means;

drive means for each separate feed path driving at least the single document separation means; and

means to activate the respective drive means in sequence, including logic means responsive to the document sensing means for predetermined sequential activation of the respective drive means, so that only one document passes

through a selected one of the separate document feed paths to the merged feed path at one time, whereby documents from the respective document bins are interleaved in the predetermined sequence.



4,253,652

APPARATUS FOR FEEDING PAPER TO A PRINTING OFFICE MACHINE

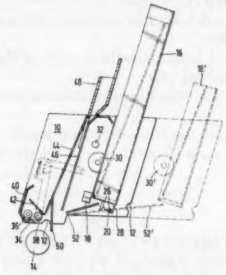
Helmut Steinhilber, Königstr. 47, D - 7210 Rottweil, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,145

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816448

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—8 R **7 Claims**



1. An apparatus for feeding sheets of paper to the platen of a printing office machine, said apparatus including a cassette holder for locating and holding a cassette containing a stack of sheets of paper in a substantially vertical position, and said apparatus further including at least one drivable separating roller for engaging and transporting the top sheet of paper in said stack of sheets of paper in said cassette, said cassette including a spring-loaded pressure plate for urging said stack into the direction of said separating roller when said cassette is in its operating position in said cassette holder and said cassette being further provided with a top sheet separating mechanism including spring-loaded top sheet separating tabs which engage the top sheet of said stack and said apparatus being further provided with paper-guide channels for guiding said top sheet into operative engagement with the printing platen of said office machine and a paper holder for holding imprinted sheets of paper and wherein said cassette has a lower side wall when placed in the operative position in said cassette holder, said lower side wall defining an inwardly projecting paper support surface for supporting the lower edges of said sheets of paper in said stack, the vertical extent of said support surface being greater than the vertical extent of portions of said top sheet separating tabs which are parallel to said lower side wall.

4,253,653

APPARATUS FOR SINGULARIZING STACKED SHEETS OF RADIATION-SENSITIVE MATERIAL OR THE LIKE

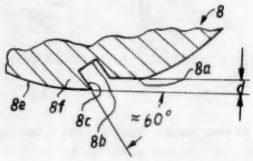
Walter Bauer, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,682

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815163

Int. Cl.³ B65H *3/24, 1/24*

U.S. Cl. 271—22 **18 Claims**



1. In an apparatus for removing successive outermost sheets of a stack of overlapping sheets each of which has front and rear edge faces and wherein the outermost sheet has an outer side facing away from the neighboring sheet of the stack, the combination of an abutment for that part of the outer side of the outermost sheet which is adjacent to one edge face thereof; means for biasing the stack toward said abutment to thereby locate the outermost sheet in a predetermined plane; a rotary singularizing member including a substantially horizontal roller having a periphery provided with at least one elongated recess extending into said roller and delimiting a projection movable along an elongated path having a first section into which the other edge face of the outermost sheet in said plane extends and a second section nearer to said abutment than said first section, said recess having such dimensions as to receive and confine that end part of the outermost sheet which is adjacent to said other edge face of the latter for joint movement with said roller at least through said first and second sections of said path, said roller periphery having a flat located ahead of said projection, as considered in the direction of rotation of said roller, said recess being between said flat and said projection; means for rotating said singularizing member in a direction to move said projection along said first section into engagement with the other edge face of the outermost sheet and thereupon along said second section to thereby flex away from the neighboring sheet that portion of the outermost sheet which is disposed between said end part confined in said recess and said abutment; and means for retracting said biasing means in a direction away from said abutment to thereby relax the pressure between said part of the outer side of the outermost sheet and said abutment in flexed condition of said portion of the outermost sheet so that the outermost sheet can be removed from the stack without any or with negligible friction between the outermost sheet on the one hand and the neighboring sheet and said abutment on the other hand.

4,253,654

PILE HEIGHT SENSOR IN A SHEET DISPENSING MACHINE FOR DISPENSING SHEETS ONE BY ONE

Henri Buys, Breux, France, assignor to Transac—Compagnie pour le Developpement des Transactions Automatiques, Paris, France

Filed Sep. 5, 1978, Ser. No. 939,618

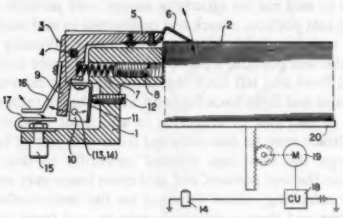
Claims priority, application France, Sep. 26, 1977, 77 28958

Int. Cl.³ B65H *1/16*

U.S. Cl. 271—155 **2 Claims**

1. A pile height sensor in a sheet dispensing machine for dispensing sheets one by one, said sheet dispensing machine

including a frame, said pile height sensor including a lift tray on which a pile of sheets rests, the improvement wherein said pile height sensor includes a lever rotatably mounted on a stationary pivot pin, said pin being integral with the frame of the machine, said lever including a first arm and a second arm, a small thin first resilient blade being fixed to the end of the first arm of the lever and resting on the top of the pile of sheets, a spring mounted to said frame and bearing against the second arm of the lever in the vicinity of the pivot pin for biasing the first lever arm towards said pile of sheets, an adjusting screw



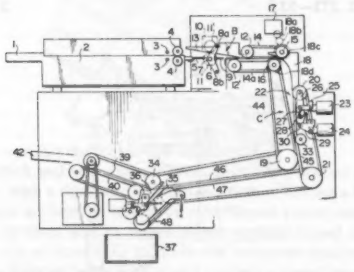
for varying the compression of said spring, a motor for driving said lift tray, said motor being started and stopped by the movement of the end of the second arm of said lever which masks or unmasks a stationary electro-optical device, and means for fixing said electro-optical device to said said second resilient blade, and a second adjusting screw in pressing contact against said second resilient blade on which said electro-optical device is fixed for deflecting said second blade and said electro-optical device; whereby, the level of the top of the pile of sheets is varied by adjusting said second adjusting screw.

4,253,655

MULTIPLE BANK NOTE TEMPORARY STORING DEVICE FOR BANK NOTE TOTALING MACHINE

Seiya Nishimoto, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jun. 12, 1979, Ser. No. 47,705
Claims priority, application Japan, Jun. 14, 1978, 53-72662
Int. Cl.³ B65H *5/24, 5/36*
U.S. Cl. 271—216 **4 Claims**



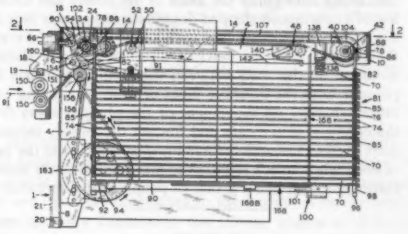
1. A multiple bank note temporary storing device for use with a bank note totaling machine, comprising: a piling station for piling a multiplicity of bank notes, which are fed discontinuously one by one, consecutively with a slight shift into a stepwise shape, the piling station including a pair of rotary bails having their centers of rotation fixedly fitted on the both ends of a shaft mounted to said bank note totaling machine, two pairs of scraping rods mounted to the both ends of said rotary bails in an end-to-end facing relationship, a pair of conveyance guide plates fixed to said shaft between said two rotary bails, two pairs of delivery rollers arranged downstream of said conveyance guide plates and shifted from each other, and a holding plate extending at an inclination for preventing the fed bank notes from having their trailing end portions bulged to an excessive extent, and a temporary storing station formed in a clearance between conveyor belts for arranging the piled multiple bank notes while allowing them to fall down into said clearance generally in parallel with the facing sides of said conveyor belts so that the arranged bank notes can be fed as a whole selectively into the bank note tray and the return exit of said bank note totaling machine.

4,253,656

APPARATUS FOR COLLATING OR OTHERWISE SORTING THE OUTPUT OF SHEET-DELIVERING DEVICES

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,319
Int. Cl.³ B65H *31/24, 39/11*
U.S. Cl. 271—293 **12 Claims**



3. Sorting apparatus for receiving sheets of material delivered in succession from the sheet output station of a sheet-delivering device including in combination a housing mounted in stationary relation with respect to said output station, a frame supported for generally vertical movement relative to said output station by a plurality of elongated flexible members attached to rotatable winding drums carried by said housing, a plurality of sheet-receiving trays mounted for stacking movement within said frame, the distance between the lowermost and uppermost of said trays when they are arranged in a single stack being significantly less than the height of said frame, means for rotating said winding drums to lift said frame and a selected plurality of the trays therein to form a stack wherein the lowermost of the trays thus lifted is in a first position sufficiently high relative to said output station that a sheet exiting from said output station will pass below it, and means for selectively dropping successively lowermost trays of said stack from said first position to a second position within said frame sufficiently low with respect to said output station that a sheet exiting said output station will be deposited thereon.

6. Sorting apparatus for receiving sheets of material delivered in succession from the sheet output station of a sheet-delivering device including in combination a plurality of horizontal sheet-receiving trays, means for positioning a selected plurality of said trays in a stack the lowermost tray of which is in a first position sufficiently high relative to such output station that a sheet exiting from said output station will pass below it, indexing means including a plurality of toothed escapement wheels selectively rotatable in unison, means on each of said trays at opposite ends thereof engageable with said escapement wheels for holding the successively lowermost trays of said stack in said first position, and means for causing said escapement wheels to rotate sufficiently to release a lowermost tray held therein to drop to a second position sufficiently low relative to said output station that a sheet exiting from said output station will be deposited thereon and for stopping rotation of said escapement wheels to hold a successive lowermost tray of said stack in said first position.

4,253,657

SOUNDING DEVICE

Rodney R. Rozzelle, 12707 Rubens Ave., Los Angeles, Calif. 90066

Filed Mar. 19, 1979, Ser. No. 21,574
Int. Cl.[3] A63J 5/04
U.S. Cl. 272—14 1 Claim

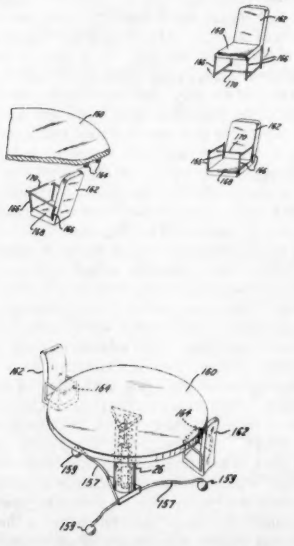
1. A sounding device comprising:
a shaft having enlarged hand grip means adjacent one end and enlarged stop means adjacent the other end;
a plunger having a hole therthrough slidably mounted on said shaft;
and a plurality of several pairs of clapper discs, each clapper disc being configured the same as the others and consisting of a continuous stepped double concave inner face and a double convex outer face with a hole through the center thereof and with the pairs of discs loosely and slidably mounted on the shaft between the hand grip means and plunger with the concave faces of each pair facing each other whereby on movement of the plunger away from the enlarged stop means and forcing the loosely mounted pairs of discs towards the hand grip means causes the pairs of discs when struck together to produce a slightly uneven clapping sound like a group of people clapping hands.

4,253,658

FOLDING JUVENILE CHAIR ATTACHABLE TO A TABLE TOP

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 758,799, Jan. 12, 1977, Pat. No. 4,160,553.
This application Apr. 2, 1979, Ser. No. 26,031
Int. Cl.[3] A63G 1/12
U.S. Cl. 272—33 R 9 Claims



1. A juvenile table combination comprising, in combination, a table top, a joint and a support base, said joint connecting said table top to said support base, said joint comprising, in combination, and outer sleeve, and resilient flexible means disposed within the outer sleeve and connected to said table top, said outer sleeve being sufficiently large so that said resilient flexible means is spaced from the internal walls of said outer sleeve and together with said table top is free to move up and down or rock from side to side, further including carrier attaching means connected to said table top for attaching one or more chairs to said table top, said carrier attaching means being disposed on the underside of said table top, and further including one or more juvenile chairs including means for engaging said chairs to said carrier attaching means, said juvenile chair including a seat portion, a back rest connected to said seat, two front legs and two back legs each leg being pivotally connected to the seat portion, a pair of braces, one brace connecting the left front and left back legs and one brace connecting the right front and right back legs and a cross brace removably connected to said pair of braces or to said front legs, so that said cross brace may be disconnected from said pair of braces or front legs, the four legs pivoted upwardly so that they extend above the seat portion, and said cross brace may engage the carrier attaching means disposed on the undersurface of said table top and thence attached again to said front legs or said pair of braces, whereby said chair is supported on or carried by said table top.

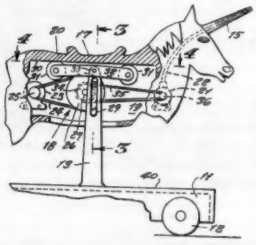
9. A juvenile chair adapted for attachment to carrier attaching means disposed on the undersurface of a table top, said chair comprising a seat portion, a back rest connected to said seat, two front legs and two back legs each leg being pivotally connected to the seat portion, a pair of braces, one brace connecting the left front and left back legs and one brace connecting the right front and right back legs and a cross brace removably connected to said pair of braces or to said front legs, so that said cross brace may be disconnected from said pair of braces or front legs, the four legs pivoted upwardly so that they extend above the seat portion, and said cross brace may engage carrier attaching means disposed on the undersurface of said table top and thence attached again to said front legs of said pair of braces, whereby said chair is supported on or carried by said table top.

4,253,659

TOY BALLOON PUMP

Karl W. Fattler, 33-06 31st Ave., Long Island City, N.Y. 11106

Filed Sep. 19, 1979, Ser. No. 77,036
Int. Cl.[3] A63G 17/00
U.S. Cl. 272—52.5 3 Claims



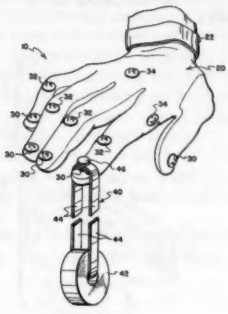
1. A toy balloon pump, comprising in combination, a platform, a stationary post on said platform, a figure supported by means on said post permitting forward and rearward reciprocal movement in rolling engagement of said figure with respect to said post and platform, a child's seat upon said figure, a tubular horn formed upon said figure upon which an inflatable balloon may be fitted, and an air pump associated with said support means and figure for discharging air through said tubular horn for inflating a balloon on reciprocal movement of said figure.

4,253,660

WEIGHTED EXERCISE GLOVE

Gary Tiktin, Apt. 403W 27500 Bishop Park Dr., W. Willoughby Hills, Ohio 44092

Filed Jun. 21, 1979, Ser. No. 50,544
Int. Cl.[3] A63B *21/18, 23/00*
U.S. Cl. 272—67 10 Claims



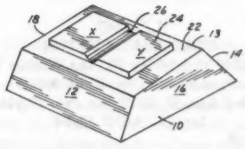
1. An exercise appliance including a glove, a weight, fastener means connected to the weight, and connection means provided at a plurality of selected locations on the glove, the connection means being cooperable with the fastener means for releasably coupling the weight to the glove at the selected location, the weight including a strap and a body supported on the strap, the fastener means being connected to the strap at a location spaced from the body.

4,253,661

LEG EXERCISING DEVICE

Brian Russell, 11715 Kehough, Northglenn, Colo. 80233

Filed Dec. 13, 1978, Ser. No. 968,742
Int. Cl.[3] A63B *23/04*
U.S. Cl. 272—96 3 Claims



1. An exercise device comprising:

(a) a thick pad of resilient, flexible essentially foamed material, with a thickness of about 6–9 inches, having a lower planar surface for resting on a horizontal planar supporting surface, and an upper planar surface sloped downwardly at from 5° to 25° from the maximum thickness,

(b) the front and rear sides of said pad being sloped inwardly of said pad toward said upper surface, forming said upper planar surface smaller than said lower planar surface, and

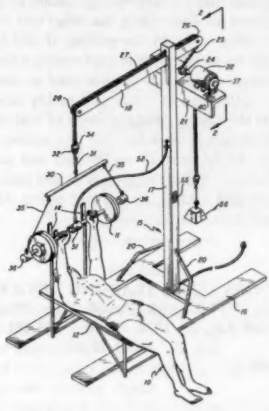
(c) a top portion of resilient, flexible material being smaller than and secured on said upper planar surface with a ledge formed of said upper planar surface peripherally around said top portion, said top portion comprised of a rectangular member of resilient, flexible foamed material mounted on a rectangular base member of resilient, flexible foamed material having a center void, whereby the peripheral portions of said top portion have more resistance to compression leaving a centerwise area of less resistance.

4,253,662

ACCESSORY APPARATUS FOR WEIGHT LIFTING

Wayne S. Podolak, 111 Kincaid Ave., Syracuse, N.Y. 13204

Filed Feb. 5, 1979, Ser. No. 9,103
Int. Cl.[3] A63B *13/00*
U.S. Cl. 272—123 8 Claims



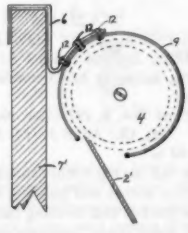
1. An apparatus for use in connection with a barbell that is being employed by a user for body building, the apparatus comprising a standard, a drive member supported by the standard and operably connected to the barbell, a power source, means operably connecting the power source to the drive member, said connecting means including normally disengaged clutch means, and means under control of the user for engaging the clutch means whereby the power source becomes operable to actuate the drive member and mechanically assist a user to raise the barbell during an exercise.

4,253,663

GOLF SWING MUSCLE DEVELOPER

Ralph L. Hughes, 6014 S. Croft Ave., Los Angeles, Calif. 90056

Filed Jun. 5, 1978, Ser. No. 912,761
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.[3] A63B *21/18*
U.S. Cl. 272—136 4 Claims



1. A golf swing muscle developer comprising a handle; a flexible cord; an axle support bracket having a stationary axle attached thereto; a pulley rotatably mounted upon said stationary axls; an inverted U-shaped mounting bracket having said axle support bracket attached thereto; a spring means to resist the rotation of said pulley; said flexible cord having one end connected to said handle and having its other end wound around and attached to said pulley; said axle support bracket including two half-shells with an opening for said flexible cord

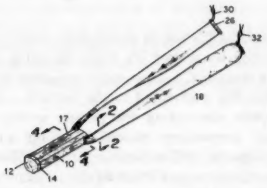
to pass through; said stationary axle being attached at each end to one of each of said half-shells; said U-shaped mounting bracket having an extension bent outwardly from the U-shaped portion and fastened to one of said half-shells whereby said pulleys may be easily and instantly and removed from the horizontal top of a door or other supporting structure; means for anchoring one end of said spring means to a stationary support and means for connecting the other end of said spring means to said pulley whereby the pulling of said handle away from said pulley, by an operator in performing a simulated golf stroke downswing, causes said flexible cord to unwind on the groove of said pulley and to rotate said pulley on said stationary axle against the strong resisting force of said spring means as said springs means is stretched by this action; said spring means reverses the rotation of said pulley and automatically rewinds said flexible cord in the groove of said pulley when the operator returns said handle toward said pulley when making a simulated golf stroke backswing.

4,253,664

TENNIS SERVE TRAINING DEVICE

Everett Daulton, 7717 Keswick, Powell, Tenn. 37849

Filed Aug. 25, 1978, Ser. No. 935,691
Int. Cl.[3] A63B *69/38*
U.S. Cl. 273—29 A **3 Claims**



1. A tennis serve training device comprising an elongated rigid handle, adapted to being gripped in the manner in which a tennis racquet is gripped, and including a first end and a second end portion opposite said first end, said second end portion including a planar slot oriented generally perpendicular to the axis of said handle and having outlets on each of two opposing sides of said handle, and a pair of elongated flexible pouches, each of said pouches including a first second secured directly to said second end portion of said handle at a point within said slot and each pouch passing outwardly through one of said slot openings.

4,253,665

POLYMER ALLOY BOWLING BALL

Charles M. Miller, Jr., and Samuel J. Orlando, both of San Antonio, Tex., assignors to Columbia Industries, Inc., San Antonio, Tex.

Filed Nov. 9, 1979, Ser. No. 92,981
Int. Cl.[3] A63B *37/14, 37/12*
U.S. Cl. 273—63 G **29 Claims**

1. A bowling ball having a film exuded on the surface of said bowling ball from within said bowling ball comprising:

an outermost shell of said bowling ball comprised of at least one cured solid phase thermosetting resin and a plasticizer;

said cured thermosetting resin being of a sufficient type and sufficient percent by weight of said outermost shell to make said outermost shell sufficiently hard and tough to be useful as a bowling ball outer shell;

said plasticizer being flowable through said cured thermosetting resin to said surface of said bowling ball to exude a film of said plasticizer upon said surface of said bowling ball; and

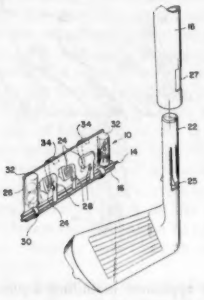
said film being sufficiently viscous to give said surface of said bowling ball characteristics of a bowling ball surface having a high coefficient of friction.

4,253,666

PERSONAL GOLF SET FOR PAR-3 COURSE

William Murphy, Da Cola Shore, Conesus, N.Y. 14435

Filed Mar. 20, 1978, Ser. No. 888,171
Int. Cl.[3] A63B *53/02*
U.S. Cl. 273—80.1 **8 Claims**



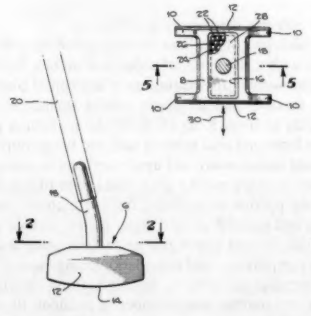
1. A par-3 golf set comprising in combination, a plurality of shaft parts for assembly into a single golf club shaft selectively useful with any of a plurality of golf club heads, a plurality of golf club heads, selectively assemblable with said shaft to make any of a plurality of different golf clubs, and a carrying case for holding said shaft parts and golf club heads, said carrying case being of canvas or sheet plastic material in a vertical plane in use and extending horizontally, with a pair of clips on a side thereof adapted to hold the case to clothes or belt of a golfer, with resilient means on the other side of the case for individually holding the club heads in spaced apart vertical position and with resilient means at the bottom of the case for holding the plurality of shaft parts in horizontal position, in which position when the shaft parts are held to the case they help to maintain the case in planar shape.

4,253,667

GOLF BALL PUTTER

Jack L. Clark, 3389 Wrightview Pl., and William T. Naud, 4248 Lemp Ave., both of Studio City, Calif. 91604

Filed Apr. 13, 1979, Ser. No. 29,646
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—168 **3 Claims**



1. A golf ball putter comprising: a shaft,

a club head having a primary body portion and a striking

face extending laterally from said body portion at the front and rear therof,

said body portin being elongated longitudinally of the line of stroke of the putter and being longer in its longitudinal dimension than in its lateral dimension, the lateral dimension of said body portion being a substantial portion of the lateral dimension of said club head, said body portion having its mass extending in its longitudinal directin and concentrated behind medial portions of said striking faces and inwardly from both ends of said striking faces, said body portion having its center of gravity located at the longitudinal and lateral center of said club head,

each of said striking faces having a medial portion coextensive with the lateral dimension of said body portion and possessing coplanar extensions defined by free ending webs located laterally beyond said body portion in opposite directions and being of equal length thereby forming with said body portion a club head shaped in the form of a symmetrical 'letter' "H",

and said shaft having its lower end connected at a point on a line vertically above said center of gravity.

4,253,668

TEE-UP APPARATUS FOR PRACTICING GOLF

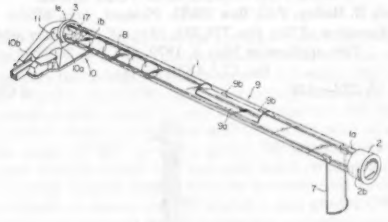
Toshihiko Ose, 13-4 Negishi 2-chome, Taitoh-ku, Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,652

Claims priority, application Japan, Aug. 10, 1978, 53/109951[U]

Int. Cl.³ A63B *57/00*

U.S. Cl. 273—201 **6 Claims**



1. A tee-up apparatus for practicing stroking golf balls comprising:

a ball pickup cylinder having a diameter larger than the diameter of golf balls and having means at one end thereof for trapping golf balls within said ball pickup cylinder upon bringing said one end down over said golf balls, and a collar at the other end of said ball pickup cylinder, the diameter of said collar being larger than that of said ball pickup cylinder,

a ball receiving base having a hole at the center thereof adapted to receive golf balls, a passageway for golf balls extending outwardly in a radial direction from the center of said hole to means for teeing up golf balls, and at least one concave portion formed in said ball receiving base and adapted to receive part of said collar to align the end of said cylinder adjacent said collar with said hole, said ball receiving base being detachable from said ball pickup cylinder, and

a lever mounted pivotally on a shaft attached to said ball receiving base and having a push portion at one end thereof capable of moving upwards and downwards within said hole, and a pushed portion at the other end thereof being positioned outside said hole and adapted to be pushed downwards to pivot said lever and push any golf ball positioned within said hole onto said passageway and towards said teeing means.

4,253,669

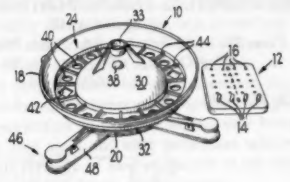
GAME APPARATUS WITH OBJECT RECEIVING RECEPTACLES AND OBJECT ENGAGING MEMBER

Michael J. Ferris, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 26, 1978, Ser. No. 954,979

Int. Cl.³ A63F *7/00*

U.S. Cl. 273—368 **15 Claims**



1. A game apparatus, comprising:

means defining a playing surface;

at least one playing object;

a first set of receptacles on the playing surface for randomly receiving said playing object;

at least one opening in the playing surface for allowing said object to escape from the playing surface; and

selectively operable means for engaging an object in one of said first set of receptacles to attempt to dislodge the object therefrom for movement generally along the playing surface and to said at least one opening, said selectively operable means comprises at least one lever mounted for movement below said playing surface, a base for supporting the playing surface, and drive means for moving the playing surface relative to the base.

4,253,670

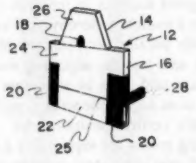
SIMULATED THERMAL TARGET

Joseph R. Moulton, Fredericksburg, and George R. Barr, Jr., Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1979, Ser. No. 64,591

Int. Cl.³ F41J *1/00*

U.S. Cl. 273—407 **12 Claims**



1. A simulated field effect thermal target for providing thermal and optical images of selective tactical thermal patterns used in training of friendly personnel and decoy of an enemy when an observer views said images through thermal night viewing sights, said simulated field effect thermal target comprising:

multidimensional target frame constructed of plywood connected to frame struts forming a lower support base and an upper frame that rests on said lower support base, said multidimensional target frame having a selective paint scheme on the outer surface thereof and having internal cavities forming a flue draft feeding to outside vents in which said internal cavities are formed by sheet metal baffles enclosed by wood framing; and

heat generating means positioned in the bottom of said lower

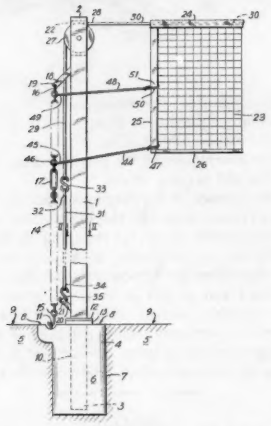
support base within said internal cavities to cause heat to emanate from the paint of said selective paint color scheme to simulate said selective tactical thermal patterns.

4,253,671

POLE STRUCTURE FOR SUPPORTING A NET OF A FIELD GAME

R. B. Pace, 3461 Old Brandon Rd., Pearl, Miss. 39204

Filed Oct. 22, 1979, Ser. No. 86,658
Int. Cl.[3] A63B *61/04*
U.S. Cl. 273—411 **8 Claims**



1. A pole structure for supporting a net of a field game, said pole structure comprising

an elongated substantially linearly extending member having spaced opposite top and bottom ends;

mounting means for supporting said elongated member at its bottom end substantially vertically in the ground;

a length of chain having a bottom end coupled to said mounting means, a spaced opposite top end coupled to said elongated member in the area of the top end of said member in a manner whereby said length of chain extends substantially parallel with said member in spaced relation therewith and tension adjusting means coupled therein intermediate said ends in a manner whereby said chain functions as an adjustable strut to maintain said member in substantially vertical position; and

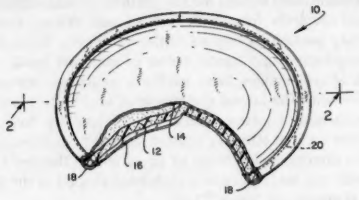
net supporting means for supporting a net in the area of the top end of said elongated member and substantially perpendicularly to said member, said net supporting means comprising a roller rotatably mounted on said member closely adjacent the top end thereof, a length of cord passing around part of said roller in a manner whereby a first part of the cord extends in spaced substantially parallel relation with said elongated member between said member and said length of chain and a second part of said cord extends substantially perpendicularly with said member for supporting a net at the top of the net and a length of elastic material having a top end coupled to the first part of said cord and a spaced opposite bottom end coupled to said elongated member in the area of the bottom end thereof whereby tension is maintained on a net supported by said cord and said net is lowerable along said elongated member.

4,253,672

FLEXIBLE FLYING DISC

Fred L. Milzoff, New York, N.Y., and Charles DeSaro, Morris Township, Morris County, N.J., assignors to PFC Industries, Inc., New York, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,462
Int. Cl.[3] A63H *27/00*
U.S. Cl. 273—424 **10 Claims**



10. An advertising device in the form of a flexible flying disc comprising a resilient core having a substantially circular configuration, said core being covered by at least one conforming segment of fabric, a cloth binding strip surrounding a peripheral edge of the core, stitching means for securing the binding strip and the fabric to the core, said stitching means further being effective for internally stressing the core to urge a curved saucer shaped configuration.

4,253,673

PIECE FOR CATCH AND TOSS GAME

Dennis B. Bailey, P.O. Box 10653, Phoenix, Ariz. 85064

Continuation of Ser. No. 778,853, Mar. 18, 1977, abandoned. This application May 4, 1979, Ser. No. 36,087
Int. Cl.[3] A63B *65/00*
U.S. Cl. 273—428 **2 Claims**

1. A game piece for a game which is played by manually throwing the game piece between the players, the object of which is to catch the game piece in a prescribed manner, said game piece comprising:

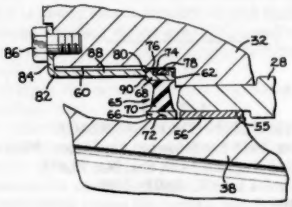
(a) an elongate generally cylindrical body member having opposite first and second ends with the balance point being at the approximate axial midpoint of said body, said body defining a blade area and a handle area, the handle area extending axially along said body from said first end to a terminus along said body and the blade area extending from the terminus of the handle area to said second end;

(b) padding extending about said body in at least the blade area;
(c) a sleeve of a durable fabric encasing said blade area;
(d) a covering extending coextensive with said handle area and defining an axially extending portion by which the piece is to be caught, said handle being devoid of any radially extending projections and being visibly distinctive from said blade area; and
(e) protective tip means secured at said first and second ends.

4,253,674
SHEAR SEAL ASSEMBLY

David M. Fee, Groveland, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

This PCT application filed Aug. 30, 1979, Ser. No. 95,192
PCT No. PCT/US79/00665, § 371 Date Aug. 30, 1979, § 102(e) Date Aug. 30, 1979
Int. Cl.³ F16J *15/32*; B62D *55/16*
U.S. Cl. 277—5 **9 Claims**

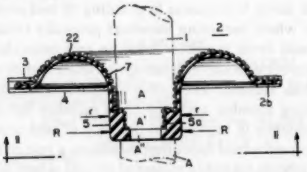


1. A shear seal assembly (65) for sealing between two members (28,38) having limited relative rotation therebetween, said seal assembly (65) comprising an inner circular means (66) and an outer circular means (68), one of said circular means (66, 68) being secured with respect to one of said members (28,38), a groove (74) formed in an exposed wall (76) of the other of said circular means (66,68), an elastic means (70) bonded between said inner circular means (66) and said outer circular means (68) to permit limited relative rotation between said circular means (66,68), an elastic seal (78) seated in said groove (74) in said other circular means (66,68) and sealing said other circular means (66,68) to the other of said members (28,38), and fastening means (82) carried by said other member (28,38) and urging said other circular means (66,68) into fixed relationship with said other member (28,38).

4,253,675
IMPROVEMENTS OF SEALED SHAFTS

Wilfred H. St. Laurent, Jr., Marblehead, Mass., assignor to Bellofram Corporation, Burlington, Mass.

Division of Ser. No. 3,163, Jan. 15, 1979, Pat. No. 4,208,060.
This application Nov. 1, 1979, Ser. No. 90,366
Int. Cl.³ F16J *3/04, 15/56*
U.S. Cl. 277—30 **4 Claims**

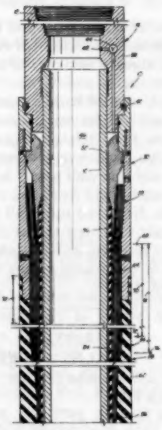


1. A sealed shaft comprising in combination
(a) a shaft having a pair of axially outer portions of relatively large outer diameter and a contiguous axially inner portion of relatively small diameter, said axially inner portion defining an annular cavity in said shaft;
(b) a rolling diaphragm including an elastomeric ply and a fabric reinforcement of said ply, said rolling diaphragm having a convoluted rolling wall and attachment means on both ends of said rolling wall;
(c) one of said attachment means including a clamping flange on the radially outer end of said rolling diaphragm;
(d) the other of said attachment means on the radially inner end of said rolling diaphragm comprising an elastomeric sleeve arranged in coaxial relation to and surrounding said shaft and including an annular projection projecting into said cavity and conforming to the shape thereof, said projection exerting a radially inward pressure on said portion of said shaft of relatively small diameter; and
(e) said fabric reinforcement being removed from a region of said annular projection to provide an interface between said cavity in said shaft and said projection where the radially inward pressure of said projection is not limited by the presence of said fabric reinforcement.

4,253,676
INFLATABLE PACKER ELEMENT WITH INTEGRAL SUPPORT MEANS

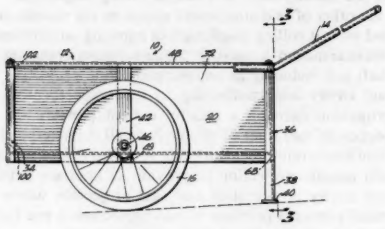
Eugene E. Baker, and Steven Streich, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 15, 1979, Ser. No. 48,842
Int. Cl.³ F16J *15/40, 15/46*
U.S. Cl. 277—34.6 **15 Claims**



1. An inflatable packer element, comprising:
a first annular shoe means;
a second annular shoe means axially spaced from said first show means;
an inflatable bladder means connected between said first and second shoe means, and including a reinforcing means; and
wherein said reinforcing means includes a reinforcing element having first and second ends securely fastened to said first and second shoe means, respectively, and a plurality of reinforcing layers, each of said reinforcing layers having a first end securely fastened to said first shoe means and a free second end terminating between said first and second shoe means.

4,253,677
FOLDING UTILITY CART
Carl R. Wissler, 1345 Morningside Dr., Fort Myers, Fla. 33901
Filed Aug. 10, 1979, Ser. No. 65,725
Int. Cl.³ B62B 1/12
U.S. Cl. 280—40 **8 Claims**



1. A folding utility cart comprising an open top load carrying box including a generally rectangular floor panel, a pair of generally rectangular side wall panels hingedly connected along respective longitudinal side edge portions of said floor panel for respective opposite inward pivotal movement from vertical box forming positions to substantially flat positions atop said floor panel;

(a) a pair of wheels, each of which is rotatably journaled relative to one of said side wall panels in a manner whereby said pair are substantially in axial alignment for rolling engagement on a support surface with said side wall panels in said vertical positions, and are individually companionately positioned with said related side wall panels by said pivotal movements thereof;

(b) generally rectangular removable front and rear end wall panels;

(c) means to position said front and rear end wall panels in respective spanning relation between opposed front and rear vertical edges of said pair of side wall panels in their vertical positions;

(d) a generally U-shaped handle extending outwardly from one end of said cart for manual manipulation thereof;

(e) socket means fixed relative to said side wall panels to slidably receive respective end portions of said U-shaped handle with said side wall panels in said vertical positions;

(f) means, carried by said front and rear end wall panels, to lock said side, front and rear wall panels in vertical positions when said front and rear wall panels are inserted in said means to position, and to lock said U-shaped handle end portions in said socket means when said end portions are positioned therein.

4,253,678
INVALID WALKER
Stanislas Leclerc, 625 Rouleau St., Apt. 3, St. Hyacinthe, Quebec, Canada (J2S 1B6)
Filed Nov. 26, 1979, Ser. No. 97,562
Int. Cl.³ B62B 7/08
U.S. Cl. 280—42 **1 Claim**

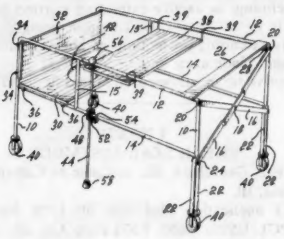
1. An invalid walker comprising:

(a) a pair of side frames each including two vertical legs joined by transverse members;

(b) an X-shaped frame comprising two cross-members pivotally connected to each other and joining the two side frames at the front of the walker, with the upper ends of said cross-members being pivotally mounted on the upper ends of the legs and the lower ends of said cross-members being slidably mounted on the lower ends of the legs for permitting folding of the walker;

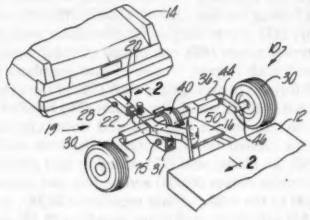
(c) a removable seat assembly which may be mounted on the side frames at the rear of the walker after entrance of the invalid person into the walker;

(d) means for bridging the side frames at the front of the walker for maintaining the side frames apart during use and



(e) wherein the lower end of each front leg is formed of two spaced leg members, and the lower ends of the cross-members are provided with a pin which can slide between the two leg members.

4,253,679
TRAILER HITCH CARRIAGE
Frank T. Sargent, 1845 Landsdowne, Ann Arbor, Mich. 48105
Filed Aug. 29, 1979, Ser. No. 70,676
Int. Cl.³ B60D 7/00
U.S. Cl. 280—405 R **13 Claims**



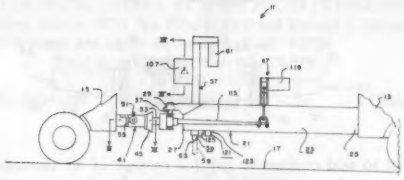
13. A hitch carriage for connecting a trailer to a towing vehicle to reduce the downward trailer load carried by said towing vehicle, said hitch carriage comprising a frame, means for releasably and pivotally connecting said frame to said towing vehicle for constrained up and down movement about an axis transverse of said towing vehicle, an elongated cross member extending transverse of said towing vehicle and pivotally and frictionally mounted on said frame about an axis transverse of said towing vehicle, a Y-shaped yoke mounted on said cross member at the double end thereof and extending rearward of said cross member such that the single end thereof pivots up and down in response to pivoting of said cross member, a pair of wheel mounting members pivotally mounted on the ends of said cross member about an axis coincident with said cross member axis and extending rearward and downward from said cross member axis, torsion means connecting said wheel mounting member and said cross member for applying increased resistance in response to pivoting of said cross member relative to said wheel mounting members, a pair of laterally spaced road wheels rotatably mounted on said wheel mounting members about an axis transverse of said towing vehicle, and trailer hitch means for connecting said trailer to said single end of said Y-shaped yoke at a predetermined location forward of said road wheels axis such that a predetermined portion of said trailer load is carried by said road wheels.

4,253,680

HITCH FACILITATING

John M. Albright, 5921 Green Dr., Memphis, Tenn. 38118, and Steven G. Goode, 3351 Ladue, Memphis, Tenn. 38127

Filed Mar. 9, 1979, Ser. No. 19,439
Int. Cl.³ B60D 1/14
U.S. Cl. 280—479 R 6 Claims



1. Hitch means for removably connecting a trailer to a vehicle, said trailer having a longitudinal axis and resting upon a supporting surface, said hitch means comprising:

(a) first coupling means attached to said trailer;

(b) second coupling means attached to said vehicle;

(c) attachment means for attaching said first and second coupling means to one another;

(d) equalizer bar means for being associated with said first coupling means;

(e) electrically controlled winch means for being associated with said equalizer bar means for selectively applying tension to said equalizer bar means;

(f) electrically controlled jack means associated with said first coupling means for causing said first coupling means to be raised or lowered with respect to said supporting surface;

(g) electric circuit means, said circuit means including a pivot switch means for controlling said jack means, said pivot switch means having a longitudinal axis and being pivotally associated with said trailer for movement with said longitudinal axis of said pivot switch means in a plane parallel to a vertical plane extending along said longitudinal axis said trailer, said pivot switch means activating said jack means whenever electric current is directed to said pivot switch means and said longitudinal axis of said pivot switch means is not horizontal, said pivot switch means having a first position and a second position and a third position, said jack means being activated to raise said first coupling means when said pivot switch means is in said first position, said jack means being activated to lower said first coupling means when said pivot switch means is in said second position, no electrical current passing to said jack means when said pivot switch means is in said third position, said electric circuit means controlling said winch means; and

(h) lock means for locking said pivot switch means in any one of an infinite number of positions with said longitudinal axis of said pivot switch means in said plane parallel to said vertical plane extending along said longitudinal axis of said trailer.

4,253,681

PASSIVE SEAT BELT SYSTEM

Ronald R. Barnett, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1979, Ser. No. 41,013
Int. Cl.³ B60R 21/10
U.S. Cl. 280—804 1 Claim

1. In combination with a vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening selectively opened and closed by a movable door, a passive occupant restraint system comprising:

a fixed length restraint belt having an upper outboard end mounted on the vehicle body generally adjacent the occupant shoulder and a lower outboard end mounted on the lower rear corner of the door;

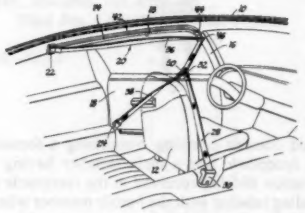
a junction ring slidably encircling the restraint belt and dividing the belt into a lap belt portion and a shoulder belt portion;

a control belt having an outboard end attached to the junction ring and an inboard end;

a control belt retractor mounted on the vehicle body inboard the occupant for retracting and extending the control belt;

a track mounted on the vehicle body and extending longitudinally forward from the outboard shoulder belt end;

a carriage slidably receiving the shoulder belt portion of the restraint belt and being movable along the track between a rearward position disposing the lap belt portion and



shoulder belt portion in restraining positions adjacent the occupant and a forward position disposing the shoulder belt portion forwardly of the occupant and lifting the lap belt portion upwardly and outwardly as permitted by extension of the control belt from the control belt retractor;

and a catch element fixedly attached to the restraint belt lap belt portion at a point thereon always spaced from the junction ring when the lap and shoulder belts are in restraining position, whereby the catch element is engaged by and limits downward sliding movement of the junction ring upon upward and outward movement of the lap belt portion during forward movement of the carriage and lifts the junction ring and the control belt substantially upwardly and forwardly away from the seated occupant.

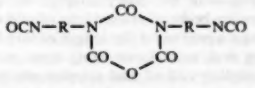
4,253,682

PRESSURE-SENSITIVE COPYING PAPER SHEETS

Günther Baatz, Buxheim; Walter Schäfer, Cologne; Kurt Findeisen, Odenthal, and Manfred Dahm, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 935,768, Aug. 22, 1978, abandoned.
This application Mar. 13, 1979, Ser. No. 20,074
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1977, 2738509
Int. Cl.³ B41M 5/16, 5/22
U.S. Cl. 282—27.5 1 Claim

1. A pressure-sensitive copying paper comprising a solution of a dye-precursor agent in microencapsulated form, wherein the dyeprecursor agent is encapsulated as a solution in a hydrophobic organic solvent in microcapsules comprised of the polyaddition product of a diamine and a diisocyanate of formula



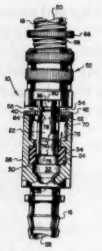
wherein R is n-hexylene.

4,253,683

SAFETY-BLEED-STOP HOSE COUPLING

Donald G. Jentsch, 406 Salisbury, Victoria, Tex. 77901, and Frank L. Ardoin, Rte. 5 Box 152 F, Victoria, Tex. 77901

Filed Aug. 13, 1979, Ser. No. 65,913
Int. Cl.³ F16L *21/02, 55/00*
U.S. Cl. 285—13 **2 Claims**



1. A fluid conduit coupling comprising a female member defining a receptacle and a male member having a tubular sidewall portion slidably received in the receptacle and engagable in sealing relation with the female member when inserted therein, said female member having a pair of inwardly directed, oppositely disposed segmental lugs at one end thereof, said segmental lugs being angularly spaced with respect to each other thereby defining a keyway, said tubular sidewall portion having a first pair of outwardly projecting, oppositely disposed segmental flanges for insertion into the keyway and to overlap and slidably engage behind said segmental lugs when said tubular sidewall portion is inserted into the receptacle and said members are rotated relative to each other, a second pair of outwardly projecting oppositely disposed segmental flanges axially spaced and angularly offset with respect to said first flange pair, said second pair of flanges being adapted for insertion into the keyway and to overlap and slidably engage behind said segmental lugs when said male member is inserted further into said receptacle and said members are rotated relative to each other, said female member having a bore communicating with the keyway defining a passage permitting unrestricted axial displacement of said male member and said segmental flanges between a position of sealing engagement and a safety stop position, and the tubular sidewall portion of said male member having a vent opening which is sealed by said female member when said tubular sidewall portion is fully inserted, and which is unsealed to permit fluid discharge into the passage as said tubular sidewall portion is withdrawn from the position of sealing engagement.

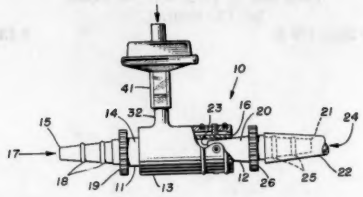
4,253,684

QUICK CONNECT COUPLER WITH AIR SHIELD

William R. Tolbert, Manchester, and Joseph Feder, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 14, 1979, Ser. No. 39,086
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—13 **4 Claims**

1. An air shielded quick connect coupler comprising first and second coupler members, each said coupler member having a body, a fluid passageway through said body and adapted to be joined to a fluid source at one end and having an opposite end with cooperating releasable coupling means adapted for mutual coupling with the other coupler member, a sleeve which encloses the body of at least one of said coupler members over at least a portion of the length of said body adjacent to its coupling end, said sleeve being open at its distal end around the coupling end of said coupler member and being closed at its opposite end over said coupler member, and said sleeve having an air inlet for admission of air through its outer wall, a narrow concentric gap between the inner wall of said sleeve and the outer wall of said enclosed coupler member at said coupling end, and an air passageway leading from said air



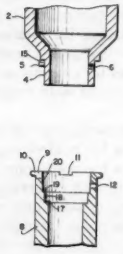
inlet to said concentric gap for passage of air through said sleeve and exiting at the distal end of said sleeve over the coupling end of said enclosed coupler member.

4,253,685

STEAM-TIGHT JUNCTION FOR TUBULAR ELEMENTS

Nat Camp, Campillary Systems, Inc., Gettysburg, Pa. 17325

Filed May 30, 1979, Ser. No. 43,704
Int. Cl.³ F16L *53/00*
U.S. Cl. 285—41 **6 Claims**



1. A male and female junction for first and second tubular elements,

said first tubular element having a first end,

a stop means on said first tubular element spaced from the said first end,

a male junction portion of reduced diameter with a length extending from the first end to said stop means and having an inward taper,

the second tubular element having a second end,

a female junction portion at the interior of the second element adapted to form a tight seal with said male junction portion comprising,

a first annular shoulder at the interior of said second tubular element and located from the second end slightly more than the length of the male junction portion,

a tapered frustro conical surface extending from said first annular shoulder toward the second end for a fraction of said length to form a step portion,

a second annular shoulder having a small width at the top of the step portion,

a tapered frustro conical surface extending from the second annular shoulder to the second end,

all of the tapered surfaces having the same slope,

a first clearance of only a few thousands of an inch separating the male and female junction portions,

whereby the male junction portion is adapted to abut against the step portion of the female junction between the first and second annular shoulder portions and to form a tight seal when the elements expand on being exposed to internal heat or hot vapors,

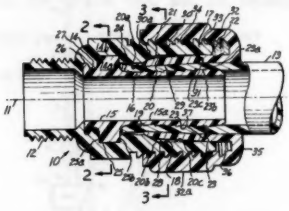
a second clearance larger than said first clearance separating the male and female junction portions in the region between the second annular shoulder and the second end whereby to relieve stresses due to heat expansion and thus prevent cracking of the second tubular element.

4,253,686

PIPE COUPLING USEFUL AT HIGH FLUID PRESSURES

W. Sidney Aitken, 9774 Via Zibello Dr., and Russell J. Sarno, 3210 Winona Ave., both of Burbank, Calif. 91504

Filed Apr. 10, 1979, Ser. No. 28,819
Int. Cl.³ F16L *19/00*
U.S. Cl. 285—249 **1 Claim**



1. Pipe coupling means for gripping a section of pipe to be inserted therein, comprising:

(a) a fluid conduit member having an internal passageway extending along an axis for fluid flow therethrough;

(b) a deformable annular wedge member coaxial with said conduit member, said wedge member not being connected to any other part of the coupling means;

(c) a nut threadable to said conduit member and coaxial therewith;

said conduit member comprising:

(1) a body section,

(2) an internal annular sleeve section coaxial with said axis, extending in one direction axially from said body section, circumferential ridges being formed on the external surface of said internal sleeve section, troughs being formed between adjacent ones of said ridges,

(3) an external annular sleeve section coaxial with said axis, extending axially in said one direction from said body section and enveloping said internal sleeve section with a first annular space between said internal and external sleeve sections; and

(4) means extending axially from said body section in the direction opposite said one direction, for attachment to a first section of pipe, said sections and means being integrally joined to one another;

said nut having an opening through it to permit passage of the pipe section therethrough, and having an outer annular envelope and an inner annular sleeve with a second annular space therebetween,

the external surface of said external sleeve engaging threads of said nut and the internal surface of said external sleeve being in sliding engagement with said nut sleeve, and having a tapered camming surface at a region between the nut sleeve and the body section;

said annular wedge member having an internal diameter allowing it to slide closely over the exterior surface of a pipe section whose internal surface is fitted over the external surface of said internal sleeve, and having a camming surface which engages the camming section of said external sleeve and having at its end remote from said camming surface, a surface engaged by said nut sleeve, and having at its end opposite said remote end, a surface in engagement with the exterior surface of the pipe section, the external diameter of said internal sleeve section increasing in both axial directions from its diameter at the position where said surface of said wedge member is in engagement with the exterior surface of the pipe section;

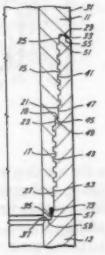
whereby when the nut is torqued on the external sleeve while a pipe section is inserted into said first annular space and between the wedge and the internal annular sleeve section, the nut sleeve engages said remote end surface of the wedge and urges the camming surface of the wedge to slide on the camming surface of the exterior sleeve, causing the wedge to deflect inwardly so as to compress the pipe section against the exterior surface of the internal sleeve.

4,253,687

PIPE CONNECTION

John H. Maples, Houston, Tex., assignor to Whiting Oilfield Rental, Inc., Houston, Tex.

Filed Jun. 11, 1979, Ser. No. 47,299
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—332.3 **2 Claims**



1. Pipe connection comprising

a tubular pin having on its exterior progressing from its distal end to its proximal end an external tapered seating surface adjacent said distal end, an annular groove adjacent said tapered external seating surface, a cylindrical external land adjacent to said external tapered seating surface, a first straight external thread adjacent to said cylindrical external land, a second straight external thread of larger diameter than said first straight external thread adjacent said first straight external thread, and a stop shoulder beyond said second external straight thread,

a tubular box having on its interior progressing from its bottom to its mouth a tapered internal seating surface adjacent the bottom of the box, a cylindrical internal land adjacent to said tapered internal seating surface, a first straight internal thread adjacent to said cylindrical internal land, a second straight internal thread of larger diameter than said first straight internal thread adjacent said first straight internal thread, and an annular stop surface beyond said second straight external thread,

the aforementioned parts of said pin being correlative to those of the box whereby the pin and box can be screwed together with said tapered sealing surfaces in engagement and said cylindrical lands opposite each other, and

a seal-ring disposed in said groove sealing between said pin and said internal tapered seating surface of said box when said pin and box are made up together, said seal ring lying between the area of metal to metal engagement of said seating surfaces and the area of proximity of said cylindrical lands,

said groove having a maximum depth less than the unstressed thickness of the seal ring, the cross-sectional area of the groove being less than the cross-sectional area of the seal ring, and when the connection is fully made up there being clearance between said cylindrical lands, said seal ring entirely filling the groove and extruding from the volume between said groove and said internal tapered

seating surface into said clearance between said cylindrical lands adjacent thereto.

4,253,688

LOCKING MECHANISM FOR DOUBLE-SLIDING SASHES

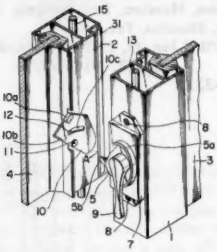
Syuichi Hosooka, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 26, 1979, Ser. No. 61,014

Claims priority, application Japan, Jul. 26, 1978, 53-102560[U]

Int. Cl.³ E05C *11/00*

U.S. Cl. 292—52 **3 Claims**



1. A mechanism for locking a dual sash window assembly in which a pair of sliding sashes are mounted in parallel, closely spaced planes within a supporting frame for relative horizontal sliding along the sliding frame, which comprises

(a) a crescent fastening member mounted on the lateral face of the meeting stile of the inside sash in a manner capable of being revolved pivotally by a handle, said crescent fastening member being provided with a pusher projection in the radial direction opposite to the crescent of the crescent fastening member,

(b) a receptacle member mounted on the inward face of the meeting stile of the outside sash in a manner capable of being revolved pivotally, said receptacle member being provided with a hooked part bent inwardly and coming into engagement with the crescent of the crescent fastening member when the crescent fastening member is pivotally revolved and being provided with a contact projection coming into contact with the pusher projection of the crescent fastening member and pushed by the contact projection when the crescent fastening member is pivotally revolved so that the receptacle member is revolved pivotally,

(c) a driving rod provided in the meeting stile of the outside sash and linked with the receptacle member and moved up and down by the revolving of the receptacle member, and

(d) locking levers each being linked with the driving rod at the upper or lower end thereof and revolvable by the up-and-down movement of the driving rod to push the side walls of the supporting frame each at one end thereof or come apart from the side walls of the supporting frame.

4,253,689

SPRING LATCH MECHANISM

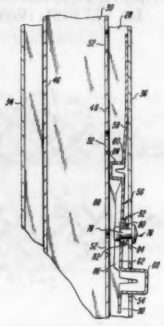
Donald S. McKee, Louisville, Colo., assignor to Scott & Fetzer Company, Lakewood, Ohio

Filed Apr. 24, 1979, Ser. No. 33,149

Int. Cl.³ E05C *17/30*

U.S. Cl. 292—338 **4 Claims**

1. In a retractable awning adapted to be mounted on a generally vertical surface wherein said awning includes an awning sheet operatively connected along an inner edge to said surface and along an outer edge to a bar adapted to be moved to and from said surface to move said awning sheet between extended and retracted conditions, and at least one brace member adapted to be extended between said surface and said bar when the awning sheet is in an extended condition, said brace member including at least two elongated arms operatively connected together in longitudinally slidable relationship, said arms each having at least one opening therethrough and a space therebetween, wherein the improvement comprises a latch mechanism adapted to releasably retain said arms in fixed relationship, said latch mechanism including a semi-rigid elongated resilient strip having a protuberance on each side thereof, said protuberances being displaced longitudinally of



said strip with one of said protuberances being located near a first end of said strip and the other of said protuberances being located near the longitudinal center of said strip, said strip having a generally flat V-shaped longitudinal cross-section in a free standing condition and being shaped to fit into said space and cooperate with at least one of said arms to bias said strip into a position wherein said protuberances can protrude through the openings in said arms, said strip further including pivot means at a pivot location disposed between said protuberances, and wherein said pivot means includes a raised shoulder surrounding a hole through said strip.

4,253,690

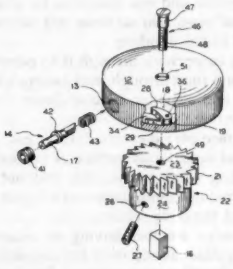
SAFETY KNOB

Nathan Hollander, 6030 N. Washtenaw, Chicago, Ill. 60659

Filed Dec. 13, 1978, Ser. No. 969,199

Int. Cl.³ E05C *21/00*

U.S. Cl. 292—354 **12 Claims**



1. An improved safety knob for use in operating a stem, said safety knob comprising:

outer knob means;

first means for normally coupling said outer knob to said stem only when said outer knob is moved in a first direction to cause said stem to move with said outer knob;

second means having normal and operated positions,

said second means in said operated position coupling said

outer knob to said stem regardless of the direction moved of said outer knob; and

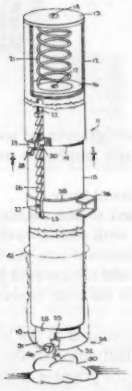
said outer knob means being operatively coupled to the stem only through said first means, when said second means is in the normal position.

4,253,691

PET LITTER REMOVER AND BAGGER

William Y. Liu, 286 Clinton Ave., Apt. 3B, Brooklyn, N.Y. 11205

Filed Jan. 10, 1980, Ser. No. 110,987
Int. Cl.³ A01K *29/00*
U.S. Cl. 294—1 BA **6 Claims**



1. A pet litter retrieval device wherein litter is collected into a container, the device comprising:

(a) a hollow cylindrical handle having at least one end open and a longitudinal slot extending from an open-end to the interior of the handle,

(b) bracket means straddling the slot proximate to the open-end,

(c) a pawl pivotably mounted in the bracket,

(d) a hollow cylindrical housing having at least one open-end, the housing having a longitudinal slot between its ends, said housing slidably engaging the handle at the slotted end, an open-end extending therefrom,

(e) an elongated retractable cylindrical rod, the first and slidably engaging the open-end of the housing extending from the handle,

(f) clamp means at the second end of said rod to which the bottom of the container is secured, said container being then everted around the housing,

(g) a toothed bar extending longitudinally from within the slot in the handle through the bracket means, and atop the slot in the housing, said slots being in longitudinal alignment, the toothed bar being connected at one end to the rod through the housing slot so that the clamp means extend past the housing when the bar is at its lowermost position within the housing slot, and

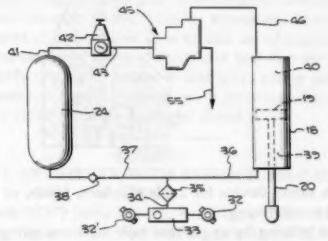
(h) spring means connecting the handle to the housing whereby a force applied downwardly on the handle advances the pawl within the teeth of the bar thereby elevating the clamp body and container within said housing, the litter being collected within said container.

4,253,692

CONTROL SYSTEM FOR MATERIAL PLACEMENT BUCKETS

Roland E. Garlinghouse, 2415 E. Washington Blvd., Los Angeles, Calif. 90021

Filed Dec. 26, 1978, Ser. No. 973,081
Int. Cl.³ B66C *3/16*; E21B *27/00*
U.S. Cl. 294—71 **5 Claims**



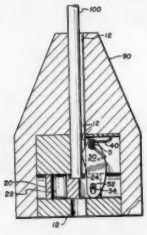
1. A control system for opening and closing the gate means of a material placement container, said control system comprising clam shell gate means, a double-acting cylinder operating said clam shell gate means and having respective gate opening and gate closing sides and a piston in operating association with the gate means, a fluid pressure receiver, a high pressure fluid supply line having a supply end adapted to be connected in the alternative to a high pressure fluid supply and to exhaust, said high pressure fluid supply line being connected to said receiver and to the gate opening side of said cylinder, a low pressure fluid supply line from said receiver to the gate closing side of said cylinder, a pressure regulator in said low pressure fluid supply line, a simultaneous exhaust valve in said low pressure fluid supply line between said regulator and the gate closing side of said cylinder, said simultaneous exhaust valve having a chamber therein with a first port in exclusive constant communication with said pressure regulator and continuously subject to said low pressure fluid supply, a second port in communication with the gate closing side of said cylinder and a third port adapted to communicate with the atmosphere for exhausting said gate closing side, one valve seat of said exhaust valve being in communication with said first port, another valve seat of said exhaust valve being in communication with said third port, and a self acting pressure responsive valveelement in said chamber being constantly acted upon by said constant low pressure fluid supply at said first port and having a succession of positions relative to said valve seats, said valve element in one of said succession of positions being closed against said first port and subject to said low pressure fluid supply and the pressure therein, said valve element being adapted to effect an opening between said second and third ports only when pressure in the gate closing side of said cylinder exceeds that of the low pressure fluid supply whereby said gate closing side of said cylinder is exahusted, said valve element in another of said succession of positions being adapted to effect an opening between said first and second ports when said gate opening side of the cylinder is open to atmosphere and while having a closed position relative to said third port whereby all of the pressure determined by said regulator is applied to the closing side of said cylinder while the opening side is connected to exhaust.

4,253,693

SAFETY DEVICE FOR CABLE CLIMBERS, HOISTS AND WINCHES

Leonard W. Gish, Rte. 1, Mt. Iron, Minn. 55768

Filed Oct. 12, 1979, Ser. No. 84,327
Int. Cl.[3] B66C 1/00
U.S. Cl. 294—86 CG 9 Claims



1. A safety device for cable climbers, hoists, or winches or the like comprising:

(a) a housing having a first hole mounted along the axis of the cable;

(b) a guide block having a second hole in alignment with said first hole and housed in said housing;

(c) a gate block also having a third hole and moveably housed along transverse axis of said guide block;

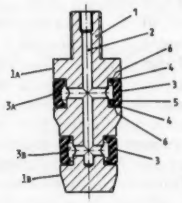
(d) means for aligning said second hole and said third hole when a cable of right size is inserted in said first hole.

4,253,694

PICK-UP DEVICE FOR ROUND PRODUCTS

Hermann Walter, Hirschberg, and Georg Fröhlich, Birkenau, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,382
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845056
Int. Cl.[3] B66C 1/46
U.S. Cl. 294—93 5 Claims



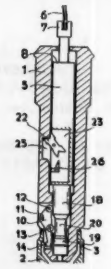
1. A device for picking up a product having a round portion, the device comprising a pick-up body having a cylindrical part adapted to be positioned radially opposite to said portion, said part having at least one circumferential groove positioned to radially face the portion, the groove having substantially flat and mutually parallel sides, a cylindrical elastomer ring positioned loosely in the groove and having axially extending lip seals slidably engaging said sides and means for introducing pressurized fluid to the groove behind said ring so as to cause the ring to move towards and frictionally grip said portion of the product to be picked up.

4,253,695

AUTOMATIC GRAPPLE

Daniel Blaive, Gif-sur-Yvette, and Claude Lafosse, Le Plessis Robinson, both of France, assignors to Novatome, Le Plessis Robinson, France

Filed Jul. 23, 1979, Ser. No. 59,587
Int. Cl.[3] B66C 1/54
U.S. Cl. 294—95 11 Claims



1. In an automatic grapple for seizing or releasing an object by means of a single suspension and maneuvering cable and comprising:

a hollow cylindrical body,

a slide connected to the suspension cable and capable of displacement with respect to the hollow body between an upper end position where the hollow body does not bear on the object and is supported by the slide and a lower end position where the body bears on the object and supports the slide,

gripping means secured to the body for axial displacement therewith radially displaceable between a gripping position in which the gripping means engages the object and a released position in which the gripping means is free from the object,

means for producing radial displacement of the gripping means in response to relative movement of the slide in the body,

a locking member having variable orientation articulated on the slide for undergoing axial movement therewith, abutment means fixed to said body and disposed in the path of travel of said locking member for engaging said locking member in the lower position of the slide to orient the locking member to a release position allowing complete ascent of the slide to said upper end position, said locking member having a locking position prior to said release position in which ascent of the slide is limited to an intermediate position,

the improvement wherein said means for producing radial displacement of the gripping means comprises portions of different diameters on said slide in the region where said slide passes adjacent said gripping means, said gripping means bearing against said portions to establish said gripping position when the slide is at said upper end position and said released position when said slide is in said intermediate position,

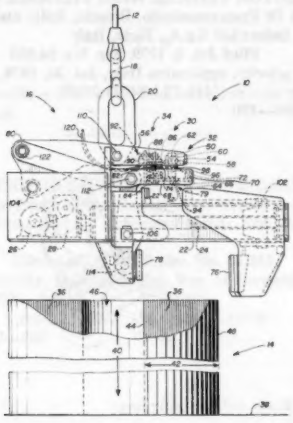
said portions of different diameter having relative axial positions on said slide such that from the intermediate locking position in which the gripping means is in released position, relative travel of the slide towards the lower end position for placing the gripping means in gripping position is less than the necessary travel to permit change of orientation of the locking member to the release position permitting free ascent of the slide to said upper position.

4,253,696

MOTORIZED LEVER-ACTION VERTICAL AXIS COIL GRAB

Harvey Bradley, East Prospect, Pa., assignor to Bradley Lifting Corp., York, Pa.

Filed Feb. 7, 1980, Ser. No. 119,216
Int. Cl.³ B66C 1/44
U.S. Cl. 294—103 CG **11 Claims**



1. A motorized lever-action vertical axis coil grab adapted to be operably employed and controlled from a remote location in suspension from an overhead crane for use in compressively engaging for elevation and movement thereof from one location to another by means of said overhead crane at least one of a plurality of upright standing wrapped metal material coils disposed upon a horizontal support surface within the operable range vicinity of said overhead crane, said motorized lever-action vertical axis coil grab comprising in combination:

(a) a tong link support structure having respectively a pivotally interconnected angularly disposed upper tong link connectably communicating with a lower tong link about a lost motion pivot juncture therebetween vicinity one of the laterally disposed ends thereof said upper tong link in turn having pivotally connected intermediate the respective laterally disposed ends thereof a pivot shackle adapted to be communicatively interconnected upwardly in dependent suspension from an overhead crane cable hook and said lower tong link supporting in pivotally connected dependence therefrom also intermediate the respective laterally disposed ends thereof a horizontal frame member with an additional cooperative pivotal connection of a downward disposed portion of said upper tong link also therewith dependently from said one of the laterally disposed ends thereof vicinity of said lost motion pivot juncture,

(b) a set of dependently disposed clamping shoes movably supported within said horizontal frame member wherein a first shoe of said set is laterally disposed outwardly on said horizontal frame member the end opposite said one of the laterally disposed ends and is provided with an adjustment means for laterally displaceable longitudinal movement thereof with respect to a second shoe of said set which is pivotally disposed centrally intermediate the laterally disposed ends of said horizontal frame member and in turn laterally displaceable pivotally in tong link support structure translated angular movement with respect to said first shoe of said set, and

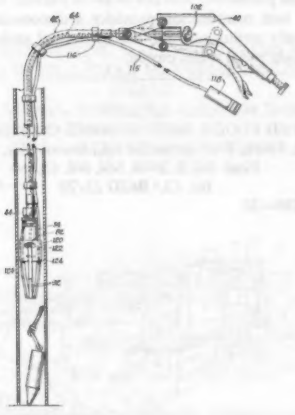
(c) a tong latch assembly comprised of a tong latch mechanism affixed the end opposite said one of the laterally disposed ends of said upper tong link and having a mechanical means cooperatively operable, subsequent to a clampable engagement of an upwardly disposed wall thickness segment of one of said coils compressively interposed said set of dependently disposed clamping shoes through lateral displacement of said first shoe with said adjustment means towards said second shoe upon said wall thickness segment therebetween in accomplishing a pre-compressed removal of coil wrap slack sponginess from the convoluted overply structure thereof, in releasing said tong link support structure of said coil grab and thereby effect a pivotally translated lever-acting self-gripping compressive force to said clamping shoes upon said pre-compressed wall thickness segment therebetween by a combined tong link tare plus coil weight translated force operable through pivotal angular movement lateral displacement of said second shoe of said set of dependently disposed clamping shoes towards said first shoe thereof to clampably engage by means of said lever-acting self-gripping tong link structure compressive force translation said coil for elevation and movement thereby.

4,253,697

REMOTE RETRIEVER WITH INTERCHANGEABLE HEAD

Adam Acosta, 10260 Bronstein Pl., San Diego, Calif. 92124

Continuation-in-part of Ser. No. 846,883, Oct. 31, 1977, Pat. No. 4,135,753. This application Jan. 8, 1979, Ser. No. 966,904
Int. Cl.³ B25J 1/02
U.S. Cl. 294—115 **3 Claims**



1. A retrieving instrument comprising:

(a) a handle;

(b) a flexible outer sheath mounted at one end to said handle;

(c) an inner actuation cable housed in said outer sheath;

(d) a quick-release head having a body mounted by a first quick-release mechanism to the other end of said sheath and having a plurality of expansible and contractable jaw elements operatively connected to said actuator cable by a second quick-release mechanism, both of said quick-release mechanisms having axially displaceable actuators which are pulled in mutually opposite directions to release same, whereby said head can be quickly removed and replaced with another head;

(e) said jaw elements being operable by the axial motion of said actuator cable in said sheath to operate said head between a release mode and a retrieving mode; and

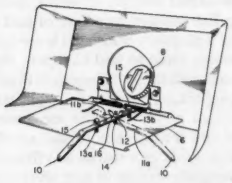
(f) control means mounted on said handle and having two operative positions for operating said actuator cable between said two modes and means to set said control means in either of said positions to positively establish said head in either of said modes.

4,253,698

THEFT GUARD FOR AUTOMOTIVE GASOLINE TANK

Hollis C. Hodson, P.O. Box 114, Amo, Ind. 46103

Filed Jun. 14, 1979, Ser. No. 48,532
Int. Cl.³ E05B *65/00, 65/12, 65/40;* **E05C** *21/00*
U.S. Cl. 296—1 C **7 Claims**



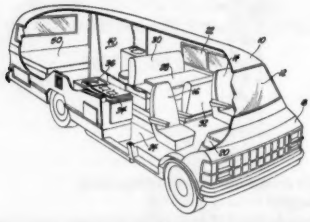
1. On an automotive body having a closeable gasoline fill-tube cover proximate to a lockable body-entry panel, which said tube cover and said entry panel are equipped and disposed such that said cover is protectively trapped by said panel whenever both said cover and said panel are closed, the improved gasoline theft guard combination wherein said cover has a selectively formed and rigid pin pivotally connected to said cover, which said pin, in normal attitude, traverses and protrudes from said cover toward said entry panel when both are closed, wherein said panel is provided with means for engaging said pin upon closing of said panel, and said pivotal connection permitting said pin to pivot parallel to said cover, whereby said combination provides a disconnect means for alternatively setting said pin out of normal attitude with respect to said panel when closed.

4,253,699

DROPPED FLOOR MOTOR HOME CONSTRUCTION

Ronald R. Frank, 3950 Burnsline Rd., Brown City, Mich. 48416

Filed Jul. 5, 1979, Ser. No. 55,060
Int. Cl.³ B62D *25/20*
U.S. Cl. 296—25 **6 Claims**



1. In a conventional height van vehicle, modified for motor home use, and having a forwardly mounted vehicle engine and a drive shaft extended rearwardly therefrom and under the van floor, the improvement in dropped floor construction, for providing greater head room, comprising;

removing a given width and length of the van floor and such sections of intermediate and main cross frame members as extend thereunder,

said van floor being removed immediately over and to one side of said drive shaft for providing a floor opening having said drive shaft exposed and extending along one side thereof

removing an additional section of the van floor, and such sections of the main frame member as extend thereacross, for enlarging said floor opening at one end thereof and having it extend towards the door wall of said van vehicle,

and a prefabricated pan member formed to fit said floor opening and its side extension to provide a dropped floor area alongside said drive shaft and a step covering thereover,

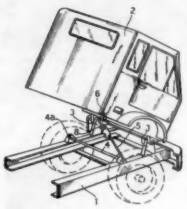
said step covering providing protection for said drive shaft and structural reinforcement lengthwise for said pan member.

4,253,700

MOTOR VEHICLE WITH TILTABLE CAB

Francesco Di Francescantonio, Brescia, Italy, assignor to Fiat Veicoli Industriali S.p.A., Turin, Italy

Filed Jul. 3, 1979, Ser. No. 54,503
Claims priority, application Italy, Jul. 24, 1978, 68758 A/78
Int. Cl.³ B62D *27/04*
U.S. Cl. 296—190 **4 Claims**



1. In a motor vehicle including:

a chassis;

a cab mounted at the front of said chassis for selective rotation about a transverse axis between a lowered position and a raised position in such a way that the centre of gravity of said cab remains to the rear of said pivot axis;

a torsion bar anchored at one end on said chassis and supported for torsional deformation about a transverse axis;

a crank arm, attached to the other end of said torsion bar, the free end of said crank arm abutting said cab so that the reaction moment of said torsion bar urges said cab towards its raised position, and

locking means to lock said cab in its lowered position,

wherein the improvement consists in said cab including a cam having a working surface with which said free end of said crank arm is maintained in constant abutment by said reaction moment of said torsion bar, said cam surface having a profile in a longitudinal vertical plane, whereby the direction of the common perpendicular, in said plane, to the surface of mutual contact between said free end and said cam surface varies as a function of the variation of the angle of rotation of said crank arm so that, for any value of said angle of rotation, the force acting between said free end of said crank arm and said cam due to said reaction moment of said torsion bar, is always substantially equal to the force acting between said cam and said free end of said crank arm due to the weight of said cab.

4,253,701

DISPOSABLE BACK AND HEAD SHEET WITH USE DETECTOR

Harry P. Kifferstein, 27250 Harvard Rd., Southfield, Mich. 48076

Continuation-in-part of Ser. No. 947,500, Oct. 2, 1978, Pat. No. 4,206,945. This application Aug. 6, 1979, Ser. No. 63,960
Int. Cl.³ A61G *15/00*
U.S. Cl. 297—220 **9 Claims**

1. A removable disposable head and back sheet for attaching to the top of a seat back and for draping over the front of said seat back, said head and back sheet comprising a sheet of soft pliable material, means at an edge of said sheet for attaching to said seat back top, and means integral with said sheet for indicating use of said sheet by a person sitting in said seat, wherein

said indicating means comprises a portion of said sheet rolled in the form of a scroll disposed below said attaching means and

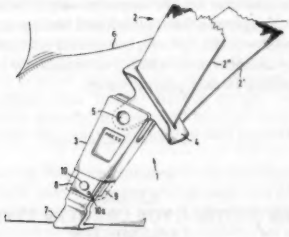
requiring unrolling prior to draping said sheet over the front of said seat back.

4,253,702

LOCK FOR SAFETY BELTS IN VEHICLES

Werner Lehr, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,343
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819018
Int. Cl.³ A62B *35/00*; A47C *31/00*
U.S. Cl. 297—468 **6 Claims**



1. A lock for a safety belt in a vehicle such as a passenger car comprising a lock housing means and a lock tongue means disposed on the safety belt, which lock tongue means can be swingably clamped in said lock housing means, said lock housing means being connected by swing shaft means with a rigid part fixed to the vehicle so that said lock housing means can be swung in the direction of load, a positively engaging check element means being provided for fixing said lock housing means to said rigid part fixed to the vehicle in a position of use for single-hand operation, said check element means, beginning at a predetermined load, releasing the lock housing means from said position so that it can be swung in the direction of load.

4,253,703

METHOD FOR MINING COAL USING AMMONIA AND NITRIFYING BACTERIA

Anthony G. Fonseca; Bruce G. Bray, and Randolph M. Kosky, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Dec. 5, 1979, Ser. No. 100,601
Int. Cl.³ E21C *41/04*
U.S. Cl. 299—5 **7 Claims**

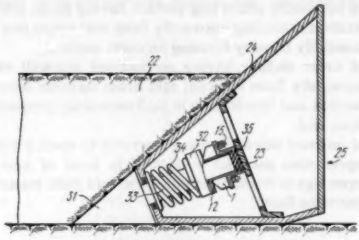
1. A method for removing subterranean coal comprising
(a) contacting said coal in-situ with an effective amount of moist ammonia or aqueous ammonium hydroxide to chemically comminute the coal to the extent desired, then
(b) placing nitrifying (autotrophic) bacteria in contact with the ammonia impregnated coal, and
(c) mining said coal when bacterial action has reduced ammonia content of the coal to a desired level.

4,253,704

METHOD AND APPARATUS FOR DISINTEGRATING A MATERIAL

Igor A. Levin, Petrozavodskaya ulitsa, 15, korpus 1, kv. 113, Moscow, U.S.S.R.

Filed Dec. 29, 1978, Ser. No. 974,231
Int. Cl.³ E21C *37/18*
U.S. Cl. 299—14 **23 Claims**



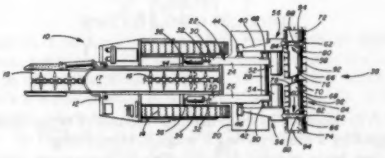
1. A method for disintegrating a material comprising acting on said material with shock waves produced by deforming a metal current-conducting element arranged in close proximity to the surface of said material being disintegrated by electromagnetically inducing individual current pulses through said current-conducting element.

4,253,705

CONTINUOUS MINING MACHINE HAVING A BOOM MEMBER WITH A FIXED MATERIAL DISLODGING MEANS

Maurice K. LeBegue, Argillite, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Jun. 12, 1979, Ser. No. 47,683
Int. Cl.³ E21C *27/24*
U.S. Cl. 299—76 **11 Claims**



1. A continuous mining machine for dislodging mine material from a mine face comprising,
an elongated body portion,
traction means for propelling said body portion,
a boom member pivotally connected to said body portion and extending forwardly therefrom,
a drum member rotatably mounted on the front of said boom member transversely to said body portion,
said drum member having an intermediate section and a pair of end sections,
said end sections extending outwardly from said intermediate section,
said pair of end sections being spaced from said intermediate section to form a pair of openings between said intermediate section and said respective end sections,
input drive means for rotating said drum member,
said input drive means extending through said pair of openings,
said drum member intermediate and end sections having cutting elements extending therefrom for dislodging material from the mine face upon rotation of said respective sections,

said cutting elements being positioned on opposite sides of said pair of openings,

a pair of housing assemblies extending forwardly from said boom member and around said pair of openings respectively, said housing assemblies surrounding said input drive means,

said housing assemblies each having an outwardly projecting portion extending around a part of said respective opening and outwardly from said drum member,

said outwardly projecting portion having an arcuate configuration extending outwardly from said respective housing assembly thereby forming an outer surface,

said outer surface having an inclined sidewall extending upwardly from adjacent said drum member intermediate section and terminating in said outwardly projecting portion, and

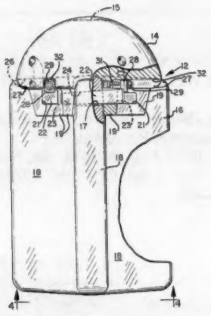
said inclined sidewalls being operable to exert a side thrust upon mine material positioned in front of said pair of openings to fracture and dislodge said mine material from the mine face.

4,253,706

MAGNETIC BREAKER BAR

Harold L. Hay, Portland, Oreg., assignor to Columbia Steel Casting Co., Inc., Portland, Oreg.

Filed May 24, 1979, Ser. No. 41,948
Int. Cl.³ B02C *1/00*; E21C *37/26*
U.S. Cl. 299—94 **16 Claims**



1. A breaker bar or drop hammer capable of being lifted and dropped by a crane having a magnet, comprising:

a cast body portion of nonmagnetic manganese steel, for superior strength and wear resistance, including head connection means cast into the body portion;

a separately formed head of magnetic metal, having a rounded top for engagement by a lifting magnet in various positions; and

means secured between the head and the head connection means of the body portion for securing the head tightly against the body portion and maintaining the two components in tight engagement.

4,253,707

BRAKE PRESSURE CONTROL DEVICE

Koji Takata, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 20, 1979, Ser. No. 50,221
Claims priority, application Japan, Jan. 25, 1979, 54-7871
Int. Cl.³ B60T *8/14*
U.S. Cl. 303—6 C **5 Claims**

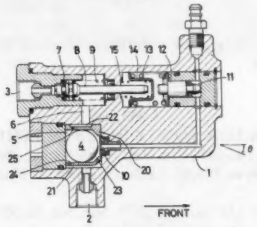
1. A deceleration-sensitive, load-responsive brake pressure control device for a vehicle, comprising:

a brake pressure control valve;

a sealing chamber and means controlled by the pressure in said sealing chamber for actuating said control valve in response to the pressure in said sealing chamber;

an inertia body chamber having a sealing flow outlet communicating with said sealing chamber;

an inertia body movable in said inertia body chamber in response to the deceleration of the vehicle for acting as a valve member for closing said sealing flow outlet for sealing fluid pressure then in said sealing chamber, said inertia body chamber for dividing the inertia body chamber into substantially two parts;



a sealing flow inlet opening into the portion of said inertia body chamber from which said sealing flow outlet opens;

a main flow inlet opening into the portion of said inertia body chamber on the opposite side of said inertia body from the portion from which said sealing outlet opens; and

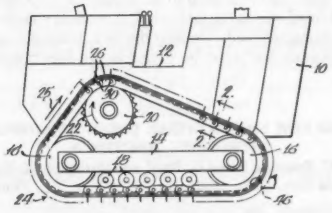
a main flow outlet opening out of said portion of said inertia body chamber into which said main flow inlet opens and extending to said control valve.

4,253,708

SLACK CONTROL FOR CRAWLER TYPE TRACK ASSEMBLIES

Glenn M. Haslett, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

This PCT application filed Apr. 20, 1979, Ser. No. 85,642
PCT No. PCT/US79/00253, § 371 Date Apr. 20, 1979, § 102(e) Date Apr. 20, 1979, PCT Pub. No. WO80/02269, PCT Pub. Date Oct. 30, 1980
Int. Cl.³ B62D *55/20*
U.S. Cl. 305—47 **6 Claims**



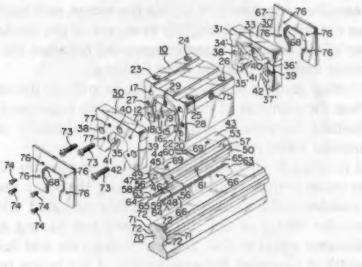
1. In a chain drive assembly having a plurality of track links (26) each with a bushing (42), a plurality of pins (30) extending through corresponding bushings to pivotally interconnect said track links to each other to form said assembly, a plurality of track shoes (28) secured to said links in spaced relation to said bushings, the improvement wherein there is provided a flexible belt (46) extending through the spaces (44) between said bushings and corresponding track shoes but unattached to said bushings, track shoes, or links for support of said assembly, said assembly being circumferentially movable relative to said belt.

4,253,709

FOUR-WAY LOADED TYPE LINEAR BEARING

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-ku, Tokyo, Japan (158)

Filed Nov. 5, 1979, Ser. No. 91,117
Claims priority, application Japan, Nov. 25, 1978, 53/144949
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **4 Claims**



1. A four-way loaded type linear bearing comprising:

a bearing body, said bearing body having a square hole therein on the four corners of which are formed axially extending recessed rolling surfaces having almost the same radius of curvature as the ball radius, said bearing body also having at each of the end faces thereof an annular convex portion adjacent the edge portions of said rolling surfaces and further having escape ball holes which axially extends through said bearing body in positions adjacent the outer periphery of said annular convex portion;

side covers to be fitted and secured to the end faces of said bearing body, said side covers being each provided with an annular concave portion formed to match said annular convex portion in said bearing body, and further provided with ball direction changing U-shaped grooves which extend across said convex portion; and

a retainer to be inserted and fixed into said bearing body, said retainer having inclined surfaces in positions opposed to said plural rolling surfaces in which inclined surfaces are formed slits, and further having tongue pieces formed at both ends of said slits,

in which opening ends corresponding to the width of a rail bed are formed in the lower portion of said bearing body and that of said side covers.

4,253,710

HIGH TEMPERATURE SEALING SYSTEM FOR A ROTARY ROCK BIT

Lee Goodman, Santa Rosa, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 954,710, Oct. 25, 1978, abandoned.
This application Oct. 9, 1979, Ser. No. 83,124
Int. Cl.³ F16C *33/80*; E21B *9/08, 9/35*
U.S. Cl. 308—8.2 **1 Claim**

1. An earth boring bit for operation in a fluid filled borehole, comprising:

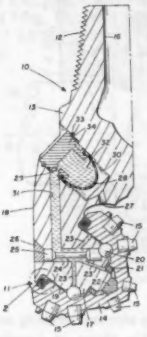
a bit body;

a bearing pin extending from said bit body;

a rolling cone cutter rotatably mounted on said bearing pin with a lubricant in a lubricant area between said bearing pin and rolling cone cutter, said rolling cone cutter having a cone mouth;

a seal assembly positioned around said bearing pin within said cone mouth and located between said bearing pin and said rolling cone cutter for retaining lubricant in said lubricant area and preventing fluid in said borehole from entering said lubricant area, said seal assembly including a non-rotating element affixed to said bearing pin, said non-rotating element having a pair of non-rotating elements projecting radially toward the cone mouth; and

a rotating element affixed to said rolling cone cutter at said cone mouth, said rotating element having three integral elements axially spaced from one another and projecting radially toward said pin, with the axially outer two of said three elements having a free end spring biased into sealing contact with the opposite sides of said non-rotating ele-



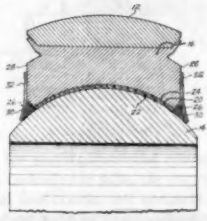
ments extending between said rotating elements and axially spaced therefrom and said non-rotating projecting radial elements each having a free end terminating closely adjacent said rotating element to provide a labyrinthine seal having limited face seal areas on two of said three rotating projecting radial elements contacting said non-rotating projecting radial elements to provide face seals that maintain said lubricant in said lubricant area and prevent fluid in said borehole from entering said lubricant area.

4,253,711

SEALED LINED BEARING

William F. Lynn, and Gordon M. Walker, both of Renton, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 895,331, Apr. 11, 1978, Pat. No. 4,190,302, which is a continuation of Ser. No. 725,808, Sep. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 576,491, May 12, 1975, Pat. No. 4,055,369. This application Dec. 26, 1978, Ser. No. 973,465
Int. Cl.³ F16C *33/74*
U.S. Cl. 308—36.1 **4 Claims**



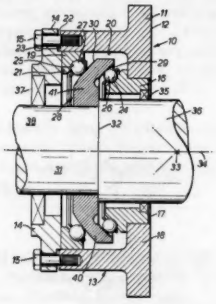
1. A sealed lined bearing comprising: an outer race having an undercut side adjacent an inner race, a ring partially filling the undercut part of the outer race and having a beveled inner side to extend outward from the outer race toward the inner race, a resilient material at the juncture between the outer race, a lining, and the inner race and compressibly held by the beveled side of the ring, and means for holding the ring in position.

4,253,712

SELF ALIGNING ROLLING ELEMENT BEARING

Rupert K. Rixon, 537 Main Rd., Wellington Point, Queensland, Australia

Filed Jun. 8, 1979, Ser. No. 46,674
Claims priority, application Australia, Jun. 8, 1978, 36931/78
Int. Cl.[3] F16C *19/08*
U.S. Cl. 308—183 9 Claims



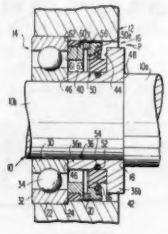
1. A self aligning rolling element bearing assembly adapted to support a shaft rotatable about its longitudinal axis and including: a housing; a carrier member adapted to be supported within said housing on and concentric with said shaft and said carrier member having spaced concentric spherical bearing surfaces at opposite sides thereof, and a pair of co-axial rolling element bearing assemblies disposed at opposite sides of and concentric with said bearing surfaces and each said bearing assembly including a plurality of rolling elements supported operatively between a fixed raceway in said housing and a respective said spherical bearing surface.

4,253,713

HIGH INTEGRITY FLUID PRESSURE ROTARY SHAFT SEAL

Joseph W. Chambers, Sr., Santa Ana, Calif., assignor to Disposable Waste Systems, Inc., Santa Ana, Calif.

Filed Oct. 22, 1979, Ser. No. 87,182
Int. Cl.[3] F16C *33/78*
U.S. Cl. 308—187.1 5 Claims



1. An improved fluid pressure assisted, high integrity, rotating shaft seal assembly for sealing a shaft supported for rotation about its axis within a housing bore by an anti-friction bearing interposed between the shaft and the housing bore, said seal assembly comprising:

an annular bushing fixed to said shaft adjacent the anti-friction bearing and on the high pressure side of the housing,

said bushing being L-shaped in radial section and including a base portion fixed to the shaft and bearing on the end remote from the anti-friction bearing a radially outwardly projecting portion defining a radial shoulder facing said anti-friction bearing,

an annular static seal race fixed to said housing radially spaced from the base portion of the bushing, overlying the bushing base portion and being axially spaced from the bushing radially projecting portion,

said annular static seal race being peripherally recessed on its outer periphery to the side adjacent the anti-friction bearing,

an annular neoprene boot within the recess, said boot having an outside diameter slightly in excess of the inside diameter of the bore and being compressed between the annular static seal race and the fixed housing,

a rotating annular seal race having an outside diameter less than the diameter of the bore and being positioned on said bushing between said bushing radial shoulder and said annular static race,

said rotating annular seal race bearing an annular recess on its outer periphery to the side facing the static seal race,

an annular carbon insert ring sealably mounted within the annular recess of the rotating race and having an outer diameter equal to that of the rotating race and being of a width in excess of the axial length of the recess receiving the carbon insert ring,

opposed end faces of said carbon insert ring and the static race being machine lapped to provide high integrity seal contact surfaces between these relatively moving members,

an annular resilient seal sleeve locked to the inner periphery of the rotating ring and being mounted thereto and being of inverted T-shape radial cross-section, said annular resilient seal sleeve including a central radially outwardly projecting portion,

an annular steel spring embedded within said seal sleeve radially outwardly projecting portion,

the face of the rotating race to the side opposite the static race being configured, and the axial length between the radial projecting portion of the bushing and the anti-friction bearing, and the axial dimensions of said static race, said rotating race and said seal sleeve being such, that said seal spring ring within the annular steel sleeve is deflected in a direction away from the anti-friction bearing in the direction towards the high pressure side of the seal such that the fluid pressure acts simultaneously with said steel spring ring carried by said seal sleeve to maintain a high integrity seal between the rotating and static races of said seal assembly.

4,253,714

HIGH TEMPERATURE LOW FRICTION SURFACE COATING AND METHOD OF APPLICATION

Bharat Bhushan, Watervliet, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Division of Ser. No. 974,264, Dec. 29, 1978, Pat. No. 4,227,756.
This application Feb. 27, 1980, Ser. No. 125,199
Int. Cl.[3] F16C *33/04*
U.S. Cl. 308—238 7 Claims

1. A thin flexible bearing sheet coating with a low friction coating for high temperature applications, produced by a process comprising the steps of:

electroetching one surface of said bearing sheet to remove oxides and roughen said surface;

mechanically and chemically cleaning said surface to remove loose particulate matter and chemically clean said surface of the electroetch solution and other chemicals that could interfere with the bond of said coating;

mixing CdO and graphite powders in proportions of about 1:3 by weight in water to form a water suspension;

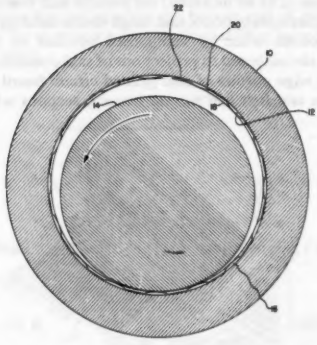
agitating said water suspension until said powders are uniformly dispersed in said water;

mixing about 28%–32% by weight sodium silicate in water solution and about 1 drop of wetting agent for every 250

cc by volume with said water suspension to produce a spray solution;

spraying said spray solution in a layer about 12–17 microns thick onto said cleaned and roughened surface;

baking said layer at about 65° C. to evaporate said water and said wetting agent, about two hours;



baking said layer above about 140° C. until said sodium silicate is fused and said layer is bonded to said surface in a thin, flexible coating; and

burnishing said coating smooth and to a thickness of less than 12 microns.

4,253,715

SEWING MACHINE CONSOLE HAVING A LOWERING DEVICE

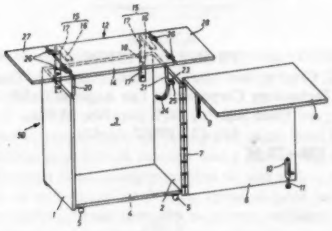
Ulrich Greiner, Oberelchingen, Fed. Rep. of Germany, assignor to Pfaff Haushaltmaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 16,723

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839745

Int. Cl.[3] **A47B** *81/00, 43/00*

U.S. Cl. 312—21 **5 Claims**



1. A console for a sewing machine comprising a supporting base having side walls and a hollow receiving portion, stirrup guide means defined within the hollow receiving portion, said base having an open top opening into the hollow receiving portion, a carrier including a plate portion having a top surface for supporting the sewing machine and a back support with a lower part engaged with said supporting base and an upper part pivoted to said lower part and connected to said plate portion, a stirrup having a portion engaged with said carrier a portion engaged with said stirrup guide means and being tiltable as guided by said stirrup guide means to move said plate portion between a substantially horizontal position above the top of said supporting base and above the hollow interior of said supporting base and a stowed position disposed obliquely within said hollow receiving portion, said upper part of said back support extending above the top of said supporting base with said plate portion in the horizontal position, wherein said stirrup guide means includes a substantially U-shaped member having a first straight arm portion engaged beneath said plate portion and outwardly extending arm portions on each side, each having a bent-off end, said stirrup guide means comprising a slot defined in the hollow interior of said supporting base with the bent-off ends of said stirrup being engaged in said slot.

4,253,716

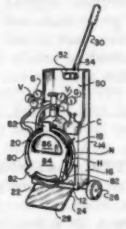
CARRIER FOR GAS CYLINDERS

James A. Turner, Jr., Charlotte, N.C., assignor to National Welders Supply Co., Inc., Charlotte, N.C.

Filed Mar. 19, 1979, Ser. No. 21,710

Int. Cl.[3] **A47B** *81/00, 97/00;* **A47G** *29/00*

U.S. Cl. 312—100 **18 Claims**



1. A carrier for gas cylinders and the like and hoses associated therewith comprising bottom, back, front and side walls defining an open-topped enclosure for supporting gas cylinders, said front wall having a reel thereon extending laterally outwardly therefrom for support of a hose wound thereon, said reel being hollow and having a partial end wall extending across the lower portion of the laterally outward end of said reel with the upper portion of said laterally outward end being open, said hollow reel and partial end wall thereby defining an article storage compartment within said reel.

4,253,717

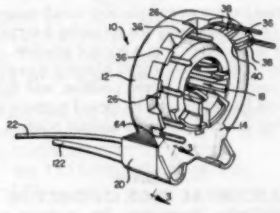
CRT SOCKET

David S. Stewart, Palatine, Ill., assignor to True-Line Mold & Engineering Corporation, Rosemont, Ill.

Filed Aug. 6, 1979, Ser. No. 63,801

Int. Cl.[3] **H01J** *19/66*

U.S. Cl. 339—14 T **7 Claims**



1. In a socket for making electrical connections to the pins on the neck of a cathode ray tube, the improvement comprising: a plurality of first conductive contacts for engaging said pins, each of said contacts having an elongated planar portion a part of which is integrally formed into a cylindrical projection from the plane of said elongated portion; a second conductive contact having a planar surface spaced parallel to said planar portion of said first contact with a corresponding plurality of holes therein, with each of said holes having a diameter larger than that of the corresponding cylindrical projection, for receiving the corresponding ones of said cylindrical projections; and a planar insulating member positioned between said first and second conductive contacts and having a correspond-

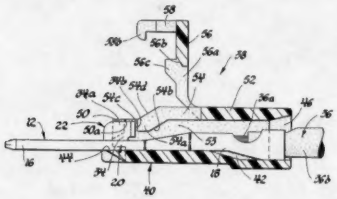
ing plurality of holes therein, with each said hole having a diameter smaller than said corresponding hole in said planar conductive contact but at least as large as the diameter of said corresponding cylindrical projection, whereby a spark gap is formed radially from each said cylindrical projection to the periphery of each said hole in said second contact; and further including a substantially ring-shaped housing having a central opening, with a predetermined axial dimension defining a cylindrical inner surface and wherein said inner surface includes a plurality of axial slots for receiving and positioning said contact portions within said central opening, for receiving the cathode ray tube neck; and wherein said first contacts are circularly arranged with each said first contact including a portion projecting into said central opening for engaging the cathode ray tube pins; and wherein said housing includes a plurality of slotted terminal support means radially spaced from said cylindrical projections and extending axially from said housing, and wherein each of said first contacts includes a terminal extension extending axially from said first contact elongated planar portion and received within said slotted terminal support means.

4,253,718

ELECTRICAL CONNECTOR

Edward M. Bungo, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1979, Ser. No. 72,039
Int. Cl.³ H01R *13/422*
U.S. Cl. 339—59 R **4 Claims**



1. In a connector body having a terminal receiving cavity and a flexible latch finger for retaining a terminal in the terminal receiving cavity, the improvement comprising:

said connector body having an exterior wall which provides a transverse opening into the terminal receiving cavity,

said flexible latch finger being attached to said exterior wall and extending into the transverse opening in cantilever fashion, and having an end portion which projects into the terminal receiving cavity for retaining a terminal therein when the latch finger is in a normal position, and

a flap hinged to said exterior wall which is movable between an open position and a closed position, said flap engaging the resilient latch finger in its closed position to maintain the resilient latch finger in its normal position.

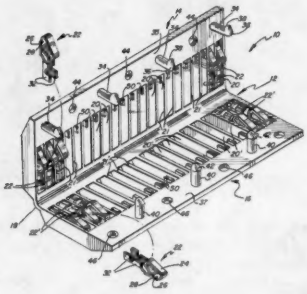
4,253,719

ELECTRICAL EDGE CONNECTOR

William J. McGinley, Barrington, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Continuation of Ser. No. 871,486, Jan. 23, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,563
Int. Cl.³ H01R *13/62, 13/514*
U.S. Cl. 339—61 M **11 Claims**

1. An electrical edge connector for mounting on an edge portion of said printed circuit board or the like to clamp over such edge portion while permitting the remaining portion of the board to project from the connector, said connector comprising, in combination, an insulator housing including first and second housing sections permanently connected by hinge means along one end to permit said housing sections to be moved between an open position where an edge portion of a printed circuit board may be inserted therebetween, and a closed position where said housing sections may be brought into pressure contact with opposite sides of said printed circuit board to clamp the same therebetween, said hinge means being dimensioned to space said first and second housing sections when in closed position by an amount sufficient to accommodate therebetween said printed circuit board on which said connector is to be mounted, the ends of said first and second housing sections opposite said hinge means defining an opening therebetween when in said closed position to permit said printed circuit board to project out of said connector whereby only an edge portion of said printed circuit board is clamped between said first and second housing sections while the remainder of said printed circuit board projects clear of said connector, a plurality of conductive metal terminal members positioned in side-by-side compartments in one of said housing sections for pressure contact with electrically conductive portions formed on a side of said circuit board where the latter is clamped between said housing sections, a plurality of flexible spring-like members located in the other of said housing sections for pressure contact with the opposite side of said circuit board when the latter is clamped between said housing sections, and locking means for releasably locking said first and second housing sections in closed position clamped on said edge portion of said printed circuit board.

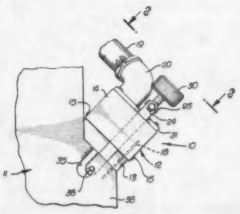


4,253,720

FRONT TAP SHOE

Claire G. Crosier, San Marcos, Calif., assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Sep. 10, 1979, Ser. No. 73,931
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **3 Claims**



1. In a tap shoe for connecting an electrical cable to an electrical terminal block, the combination of:

a body having a top, a bottom, opposing sides and opposing ends, with means defining a slot at each of said ends along a path between said top and bottom;

a plurality of electrical terminals carried in said body and accessible at said bottom;

a bar disposed along said top and having a longitudinal axis parallel to said top and bottom;

means for moving said bar away from said top;

a pivotally mounted arm carried at each end of said body on said bar, with each of said arms positioned in one of said slots and with each of said arms pivoting about said longitudinal axis in a plane parallel to said ends; and

latching means carried adjacent the bottom end of each of said arms for engaging a cooperating latching means of a terminal block.

4,253,721

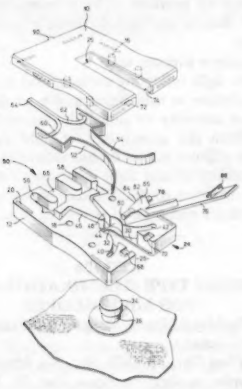
CABLE CONNECTOR

John G. Kaufman, 858 Condor Dr., Burlington, Ontario, Canada (L7T 3A7)

Filed Sep. 24, 1979, Ser. No. 77,953

Int. Cl.[3] H01R *13/639*

U.S. Cl. 339—91 R **7 Claims**



1. A cable connector for releasably connecting a cable to a protruding stud terminal, said connector having:

a generally flat body;

a terminal head-receiving slot in the flat body having an open end to permit entry of the stud terminal head in the longitudinal direction of the slot, and a closed end defining a terminal head locating portion of said slot;

the width of said slot at least in the terminal head locating portion thereof, being arranged to prevent withdrawal of the terminal therefrom in a direction other than longitudinally of the slot;

electrical contact means within the body of the cable connector and positioned to make electrical contact with the terminal head disposed in the terminal head locating portion of said slot;

a locking lever movable relative to the body between a locking position and an unlocking position;

a terminal locking formation extending downwardly from said locking lever and protruding into said slot, when the lever is in its locking position, to prevent removal of a terminal head from the terminal head locating portion in the longitudinal direction of the slot and to maintain said terminal head in electrical contact with said electrical contact means;

the locking formation being removed from the slot when the locking lever is in its unlocking position.

4,253,722

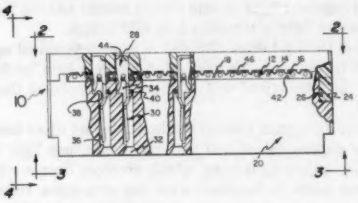
INSULATION PIERCE-TYPE CONNECTOR FOR RIBBON CABLE

Roy W. Fox, Jr., Pine Meadow, Conn., assignor to Middleburg Corporation, Canton, Conn.

Filed May 25, 1979, Ser. No. 42,358

Int. Cl.[3] H01R *11/20, 13/514, 43/00*

U.S. Cl. 339—99 R **13 Claims**



1. In an electrical connector of the type having a base with an upper side and a lower side, the base having a plurality of cavities extending through the base from the upper side thereof to the lower side thereof, the lower ends of the cavities in the base terminating in apertures shaped to receive contact pins, a cover with an upper side and a lower side, the cover having a plurality of cavities in alignment with the cavities in the base, an insulated multi-conductor wire flat cable clamped between the cover and the base such that the upper side of the base and the lower side of the cover respectively overlie the opposite sides of the cable, a plurality of insulation piercing contact elements mounted in the cavities such that the contact elements extend through the cable and are in respective electrical contact with the conductor wires, the improvement comprising:

each contact element having an upper section with at least one tine having an insulation piercing point adjacent the upper side of the base, the tine defining a conductor wire receiving slot having an apex on the side of the cable adjacent the cover and an entrance on the side of the cable adjacent the base, each contact element further having a lower section including at least one contact arm with an insulation piercing tip extending into the base such that it is adapted to engage a contact pin and its tip is adjacent an aperture, each contact element further having an abutment adapted to engage a surface of the base to prevent movement of the contact element out of the base.

4,253,723

APPARATUS FOR OPTICALLY READING INFORMATION FROM A RECORD CARRIER

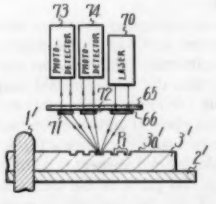
Chiaki Kojima; Takashi Otobe, both of Yokohama, and Hiroshi Ohki, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1977, Ser. No. 841,210

Claims priority, application Japan, Oct. 15, 1976, 51-124119; Oct. 15, 1976, 51-124120

Int. Cl.[3] G02B *5/32;* **G11B** *7/12*

U.S. Cl. 350—3.72 **6 Claims**



1. Apparatus for reading optically detectable indicia on a reflective record carrier, comprising:

a source of coherent light for transmitting a coherent beam

of light in an optical path from said source to said record carrier;

a first hologram formed by the recording of an interference pattern established between reference and subject light beams, with said subject beam diverging from a convergence point to interfere with said reference beam;

means supporting said first hologram in said optical path of the coherent light beam so that said first hologram focuses said coherent light on said record carrier and the focused coherent light is modulated by said indicia;

photo-detecting means disposed in a predetermined optical path traversed by the modulated coherent light for detecting the intensity of said coherent light received thereby; and

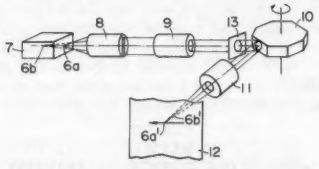
a second hologram formed by the recording of an interference pattern established between a reference light beam and a subject light beam which diverges from a convergence point to interfere with the respective reference beam, said second hologram being disposed to intercept the coherent light directed toward said photo-detecting means.

4,253,724

RECORDING OPTICAL SYSTEM

Kazuo Minoura, and Takashi Kitamura, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 31,944
Claims priority, application Japan, Apr. 28, 1978, 53-51848
Int. Cl.[3] G02B *27/17*
U.S. Cl. 350—6.8 **10 Claims**



1. A recording optical system, comprising:

a semi-conductor laser;

an objective optical system having a focal point located approximately coincident with the beam divergent position in the plane perpendicular to the junction plane of said semi-conductor laser;

a photosensitive medium for receiving information to be recorded;

an imaging optical system provided between said objective optical system and said photosensitive medium; and

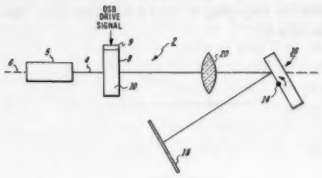
an afocal anamorphic optical system provided between said objective optical system and said imaging optical system and having a refractive power only in the plane parallel to the junction plane of said semi-conductor laser, said afocal optical system including means for positioning the image point of the beam divergent position in the plane parallel to the junction plane of the semi-conductor laser in the vicinity of said photosensitive medium and distanced within the diffraction limit from the image point of the beam divergent position in the plane perpendicular to the junction plane.

4,253,725

SINGLE SIDEBAND SCANNER

Richard V. Johnson, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 5, 1979, Ser. No. 27,342
Int. Cl.[3] G02B *27/17*
U.S. Cl. 350—6.91 **5 Claims**



1. An optical scanner system having increased frequency response, comprising:

means for generating a high intensity light beam,

an optical modulator interposed in the path of said light beam,

a double sideband video drive signal supplied to said optical modulator to produce a light intensity profile having ordered modes distributed about a point of maximum intensity,

a photosensitive surface, and

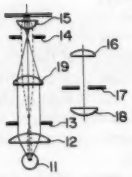
a moveable, light reflecting surface, said surface being positioned relative to said light profile so that said point of maximum intensity of said light intensity profile is displaced from the center of said light reflecting surface whereby ordered modes on one side of said point of maximum intensity of said light intensity profile are preferentially transmitted to said photosensitive surface whereby the frequency response of said system is increased.

4,253,726

TRANSMISSION TYPE ILLUMINATION EQUIPMENT FOR MICROSCOPES

Akio Taira, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1978, Ser. No. 951,256
Claims priority, application Japan, Oct. 21, 1977, 52-126433
Int. Cl.[3] G02B *21/06*
U.S. Cl. 350—87 **8 Claims**



1. A transmission type Köhler illumination equipment for microscopes, comprising:

a removably arranged condenser lens for high magnification level;

an aperture stop for high magnification level which is removably arranged at the front focal point of said condenser lens for high magnification level;

a removably arranged condenser lens for lower magnification level;

an aperture stop for low magnification level which is removably arranged at the front focal point of said condenser lens for low magnification level; and

a removably arranged auxiliary lens;

said condenser lens for high magnification level and said aperture stop for high magnification level being inserted into the optical path of the illumination equipment when it is to be used for microscopy at a high magnification level, whereas said condenser lens for low magnification level and said aperture stop for low magnification level being inserted into the optical path of the illumination equipment in place of said condenser lens for high magnification level and said aperture stop for high magnification level;

said condenser lens for low magnification level being inserted into the optical path at a point nearer the light source than said aperture stop for high magnification level when the illumination system is to be used for microscopy at a low magnification level;

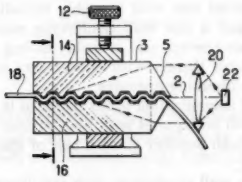
a field lens being arranged in the vicinity of the position into which said aperture stop for low magnification level is to be inserted.

4,253,727

OPTICAL COUPLER FOR OPTICAL FIBRES

Luc Jeunhomme, Arcueil, and Jean-Paul Pocholle, Ste Genevieve des Bois, both of France, assignors to Compagnie Generale d'Electricite S.A., Paris, France

Filed Jul. 18, 1978, Ser. No. 925,712
Claims priority, application France, Jul. 25, 1977, 77 22716
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.15 **12 Claims**



1. A releasable optical coupler for coupling light into or from an intermediate part of an optical fibre without damaging the fibre, said fibre being constituted by a core surrounded by a cladding with a lower refractory index, said coupler comprising:

first and second transparent coupler parts and forming first and second gratings facing each other, respectively, said gratings being constituted by two regular successions of ridges and furrows formed respectively on oppositely facing surfaces of said two transparent parts, the ridges of one grating facing the furrows of the other;

pressure means for pressing the ridges against two opposite sides of the optical fibre in order to form alternate bends in a portion of the fibre and thus to impart to this portion of the fibre an undulating form about an average axis, so as to couple modes with high propagation constants which propagate in the core to modes with low propagation constants which propagate in the cladding, said first and second coupling parts together forming an index adapter constituted by a transparent medium whose index is not substantially lower than that of the cladding so as to couple said modes which propagate in the cladding to light which propagates in said transparent medium and which constitutes an inner set of rays, the rays of this set passing in the vicinity of the axis of the fibre along the whole length of a segment of this axis and all forming a same predetermined angle with this axis; and

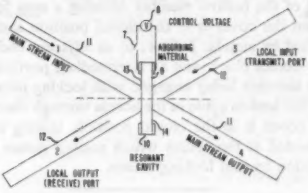
said index adapter having an optical surface in the form of a tip of revolution about said axis to provide coupling between this set of rays and a light beam which is parallel to this axis or converges at a point aligned on this axis.

4,253,728

MULTIMODE ELECTRICALLY SWITCHED OPTICAL PORT

Thirumalai N. C. Venkatesan, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 23, 1979, Ser. No. 60,013
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.15 **4 Claims**



1. An optical switch comprising:

controllable switching means **22** for transmitting or reflecting incident optical wave energy;

first and second optical wavepaths **(23, 24)** disposed on one side of said switching means **(22)**;

third and fourth optical wavepaths **(25, 26)** disposed on a second side of said switching means **(22)** opposite said one side;

said first and second wavepaths **(23, 24)**, and said third and fourth wavepaths **(25, 26)** being aligned for receiving reflected wave energy from each other when said switching means **(22)** is in the reflecting state;

said first and fourth wavepaths **(23, 26)**, and said second and third wavepaths **(24, 25)** being aligned for receiving transmitted wave energy from each other when said switch is in the transmitting state;

CHARACTERIZED IN THAT said controllable switching means **(22)** comprises:

a resonant cavity tuned to the wavelength of the incident optical wave energy, and including a voltage controllable absorber material **(35)** therein;

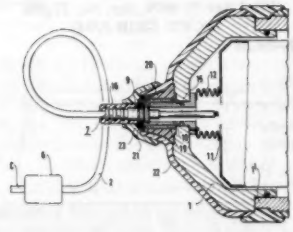
and means **(36)** for applying a voltage across said material for switching said switch between its reflecting and transmitting states.

4,253,729

SEALED CONNECTION BETWEEN AN OPTICAL FIBRE CABLE AND A SUBMERGED HOUSING

Lucien Rocton, Malakoff, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 6, 1979, Ser. No. 63,962
Claims priority, application France, Aug. 11, 1978, 78 23718
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.20 **7 Claims**



1. A sealed connection between an optical fibre cable, the "line cable", and an underwater housing in the form of a cylinder closed at each end by a respective cover and containing an

electronics block, the connection being made through one of the covers via an access provided therein, and comprising:

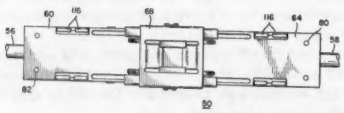
a single length of optical fibre cable, "the lead-in cable" connected at one end to the line cable and at the other end to the electronics block; and

a hollow member threaded on the lead-in cable where it passes through the access in the cover, the outside end of the hollow member and an adjacent length of the lead in cable being embedded in a first sealed casing; the inside end of the hollow member forming a stop for the cover when the cover is in the closed position and being connected by annular bellows to an adjacent end wall of the electronics block; and an intermediate portion of the hollow member being engaged with locking means for locking the lead-in cable in the access through the cover when the cover is in the closed position, sealing means being provided at the access which sealing means are held in position by said locking means.

4,253,730
OPTICAL FIBER CONNECTOR

Maurus C. Logan, Elizabeth, N.J.; John M. Cole, New Hope, Pa., and Peter Garner, Chatham, N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Continuation-in-part of Ser. No. 753,423, Dec. 22, 1976, abandoned. This application Nov. 17, 1977, Ser. No. 852,229
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.21 **7 Claims**



1. A connector for coupling first and second optical fibers in alignment along an axis, comprising:

(a) first support means for receiving said first fiber and disposing an end thereof in fixed position;

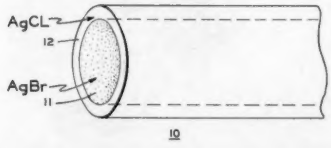
(b) second support means for receiving said second fiber and disposing an end thereof in fixed position;

(c) transfer means disposed between said first and second support means in supporting relation to one of said fiber ends and slidable along the axis of such alignment relative to at least one of said first and second support means into supporting registration with both such fiber ends.

4,253,731
INFRARED FIBER OF AGCL CLAD AGBR AND METHOD OF FABRICATION

Rogers H. Anderson, Bloomington; Enrique B. G., Minnetonka, and Di Chen, Hopkins, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 9, 1979, Ser. No. 27,958
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.34 **12 Claims**



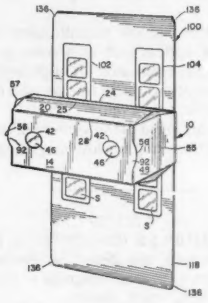
10. An infrared transmissive optic fiber comprising:

a silver bromide fiber core having a fine-grained crystalline structure clad with a fine-grained silver chloride cladding.

4,253,732
COLLAPSIBLE STEREOSCOPIC VIEWER

Robert G. Carver, Ashland, Ohio, assignor to Creative Cartons of Ashland, Inc., Ashland, Ohio

Continuation-in-part of Ser. No. 904,857, May 11, 1978, Pat. No. 4,175,828. This application Jun. 25, 1979, Ser. No. 51,865
Int. Cl.[3] G02B *27/22*
U.S. Cl. 350—140 **13 Claims**



1. A collapsible stereoscopic viewer for viewing photographic slides, said viewer comprising:

(a) a front wall having a pair of light-admitting openings therein;

(b) a reinforced rear wall assembly including a rear wall member and a rear wall reinforcing member in partial face-to-face contact, said assembly having a pair of viewing apertures therein with optical axes coincident with said light-admitting openings;

(c) a pair of magnification lenses disposed in said apertures;

(d) a top wall contiguous with both of said front wall and said rear wall member along a pair of spaced, transverse fold lines;

(e) a bottom wall contiguous with said front wall and said rear wall reinforcing member along a pair of spaced, transverse fold lines;

(f) a pair of opposing side walls contiguous with said rear wall reinforcing member along a pair of spaced, longitudinal fold lines;

(g) a pair of glue flaps contiguous with said front wall along a pair of spaced longitudinal fold lines, said glue flaps being adhered to portions of said side walls; and,

(h) a film strip receiving channel outwardly proximate said front wall, said channel including:

(i) a channel wall comprised of a pair of continuous extensions of said side walls in partially overlapping engagement;

(ii) a pair of light-admitting openings in said channel wall coincident with said optical axes; and,

(iii) light-diffusing elements disposed in each of said openings in said channel wall.

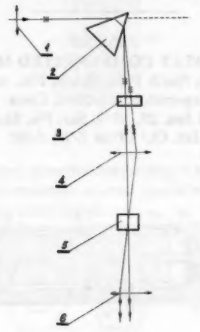
4,253,733
GENERATOR OF A HARMONIC OF LASER LIGHT

Jerzy Krasinski, and Andrzej Sieradzan, both of Warsaw, Poland, assignors to Uniwersytet Warszawski, Warsaw, Poland

Filed May 18, 1979, Ser. No. 40,027
Claims priority, application Poland, May 13, 1978, 206762
Int. Cl.[3] G02F *1/37;* H01S *3/10*
U.S. Cl. 350—380 **3 Claims**

1. A system for generating the harmonic of a laser light beam, comprising in series, a lens for introducing a source of laser light to the system, a dispersive element having a large light dispersion characteristic, an optical element for rotating the polarization surface by 90°, a focusing lens, a non-linear crystal, and an outlet lens, wherein the ratio of the derivative

with respect to the wave length of the deviation angle of the light beam, produced by the dispersive element, to the derivative with respect to the wave length of the phase-matching angle in the non-linear crystal is equal to the product of the



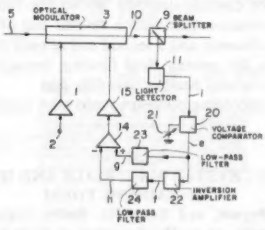
refraction coefficient of the non-linear crystal and the ratio of the distance between the dispersive element and the focusing lens to the distance between the focusing lens and the non-linear crystal.

4,253,734

ELECTRO OPTICAL MODULATION SYSTEM

Satoshi Komurasaki, and Isao Watanabe, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,042
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—386 **2 Claims**



1. An electro optical modulation system which comprises a voltage comparator for comparing a modulated light intensity signal as an output of an optical modulator with a reference voltage so as to output two voltage signals;

an inversion circuit for inverting the output of said voltage comparator;

a first mean value circuit for the mean value of the output of said voltage comparator;

a second mean value circuit for the mean value of the output of said inversion circuit;

a differential amplifier for receiving the outputs of said first and second mean value circuits respectively as the first and second inputs; and

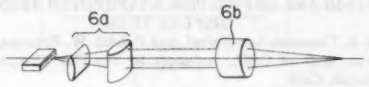
a bias amplifier for feeding the output of said differential amplifier into said optical modulator.

4,253,735

IMAGE FORMING OPTICAL SYSTEM FOR SEMICONDUCTOR LASER

Naoto Kawamura, Inagi; Koichi Masegi, and Isao Hakamada, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1979, Ser. No. 33,255
Claims priority, application Japan, Apr. 28, 1978, 53/51844
Int. Cl.³ G02B *3/00*
U.S. Cl. 350—409 **4 Claims**



1. An image forming optical system using a semiconductor laser comprising:

(a) a semiconductor laser having different positions for the original divergent point of light beam in the direction of its junction surface and the original divergent point of light beam in the direction perpendicular to the junction surface;

(b) a scanning surface which receives light beam from said semiconductor laser; and

(c) an image forming optical system interposed between said semiconductor laser and said scanning surface, and maintaining said original divergent point in the direction perpendicular to the junction surface to said semiconductor laser and said scanning surface in a conjugative relationship, the lateral magnification β in the direction perpendicular to said junction surface satisfying the following equation:

$$1.2 \sin\theta_0 \cdot Feff \leqq \beta \leqq 3 \cdot \sin\theta_0 \, Feff$$

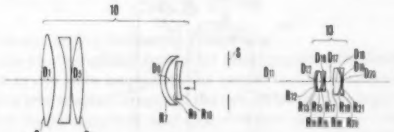
(where θ_0 denotes an angle, at which the intensity of the orientation characteristic of the laser light beam in the direction perpendicular to the junction surface becomes $1/e^2$; and Feff is an effective F-number at the image boundary side of the image forming optical system in the direction perpendicular to said junction surface).

4,253,736

COMBINATION LENS SYSTEM WITH ATTACHMENT LENS

Kikuo Momiyama, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 743,067, Nov. 18, 1976, abandoned.
This application Sep. 7, 1978, Ser. No. 940,184
Claims priority, application Japan, Nov. 19, 1975, 50-138995
Int. Cl.³ G02B *15/12, 13/02*
U.S. Cl. 350—422 **7 Claims**



1. A combination lens system comprising:

a telephotographic objective lens including a front lens group having a positive focal length, a rear lens group positioned axially closer to an image side than said front lens group, said rear lens group including at least one sub-group movable within an ordinary axial movement

range for focusing of said telephotographic objective lens and a second movement range; and

an attachment lens including a plurality of lens elements and being removably situated on the image side of said telephotographic objective lens in axial alignment,

wherein said sub-group moves in said second movement range for focusing of a system formed by attaching said attachment lens to said telephotographic objective lens.

4,253,737

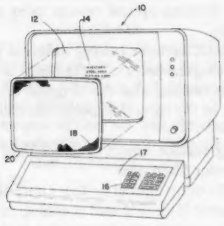
ANTI-GLARE DEVICE FOR A COMPUTER TERMINAL DISPLAY TUBE

Erik J. Thomsen, San Rafael, and Patrick W. Brennan, Greenbrae, both of Calif., assignors to Sun-Flex Company, San Rafael, Calif.

Filed Feb. 12, 1979, Ser. No. 11,112

Int. Cl.³ G02B *27/00*

U.S. Cl. 350—276 R **3 Claims**



1. An anti-glare device for a curved video display screen comprising:

a thin, lightweight, portable frame of a flexible material;

a microweave mesh of black filaments stretched across the inner surface of said frame;

said frame being wide enough that it resists bending in all directions in the plane of the mesh but being flexible in all directions transverse thereto so that said frame and stretched mesh will conform to the curvature of a terminal display scope to which said frame is attached; and

means for attaching said frame to a terminal display scope so that said mesh conforms to and contacts said scope over the surface thereof.

4,253,738

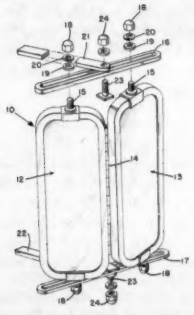
TRACTOR-TRAILER MIRROR DEVICE

Clifford G. Linkous, 818 Perdue St., Martinsville, Va. 24112

Filed Feb. 11, 1980, Ser. No. 120,700

Int. Cl.³ G02B *7/18*

U.S. Cl. 350—304 **6 Claims**



1. Mirror apparatus for mounting on the side of a cab of an articulated vehicle comprising: horizontal support means for attachment to a vehicle, a transverse frame member rotatable and slidably attached to said support means, a mirror assembly having two side-by-side mirror members, said mirror members being pivotable relative to each other and said mirror assembly being slidably affixed to said transverse member.

4,253,739

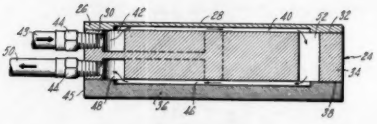
THERMALLY COMPENSATED MIRROR

Russell L. Carlson, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 25, 1979, Ser. No. 51,656

Int. Cl.³ G02B *7/18, 5/08*

U.S. Cl. 350—310 **4 Claims**



1. A thermally compensated mirror comprising:

a substrate having a top surface and a bottom surface;

a faceplate having a first side with a reflector surface and a second side attached to the top surface of said substrate;

a back plate having a first side attached to the bottom surface of said substrate and a second side defining the back of the mirror;

a plurality of coolant channels disposed within the mirror in heat exchanger relationship with said faceplate and said substrate and adapted for passing coolant therethrough;

an inlet manifold disposed within said substrate in flow communication with one end of each of said coolant channels;

a plurality of heating channels disposed within the mirror in heat exchanger relationship with said back plate and said substrate and adapted for passing a heating fluid therethrough;

an exit manifold disposed within said substrate in flow communication with one end of each of said heating channels;

a connector channel disposed within the substrate and in flow communication with a second end of each of said coolant channels and a second end of each of said heating channels, for passing fluid flowing through the coolant channels to said heating channels; and

means for providing coolant to said inlet manifold.

4,253,740

LIQUID CRYSTAL MATERIALS AND DEVICES CONTAINING THEM

Edward P. Raynes, and Robert A. Smith, both of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

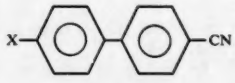
Filed Sep. 8, 1978, Ser. No. 940,758

Claims priority, application United Kingdom, Sep. 12, 1977, 37956/77

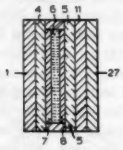
Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 350—350 R **8 Claims**

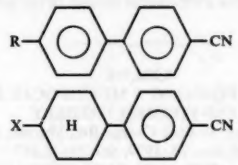
1. A liquid crystal material comprising a mixture of at least three liquid crystal compounds at least two of which compounds are represented by the formula



where X is a short alkyl group C_nH_{2n+1}, n=2, 4, or 6, or the alkoxy group $C_mH_{2m+1}O$, m=1, 3, or 5.



8. A liquid crystal material comprising a mixture of at least three liquid crystal materials at least two of which are selected from the following compounds



1

where R is a short alkyl group C_nH_{2n+1} where n is 2, 4 or 6 or the alkoxy group CH_3O, X is a short alkyl group C_nH_{2n+1} where n is 2, 4, or 6 or a short alkoxy group $C_mH_{2m+1}O$ where m is 1, 3 or 5.

4,253,741

ELECTROCHROMIC DISPLAY DEVICE

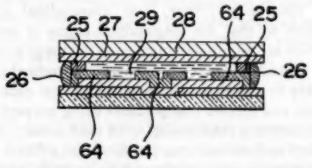
Hiroshi Nakauchi, Nara; Yasuhiko Inami, Nishinomiya, and Kozo Yano, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1976, Ser. No. 718,070

Claims priority, application Japan, Aug. 27, 1975, 50/104425

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **9 Claims**



1. In an electronic display device having a first substrate and counter electrode, a second substrate and segmented display electrodes facing said counter electrode, spacer means separating said substrates and defining therewith a cavity, an electrolyte filling said cavity between and overlying said electrodes in a display area defined by the boundaries of said cavity within said spacer means; the improvement comprising:

a continuous layer of electrochromic material over-lying said entire display area and said segmented electrodes between the latter and said electrolyte; and

an insulating layer overlying portions of said electrochromic layer, the remaining portions of said electrochromic layer not covered by said insulating layer defining discrete display segments on related portions of said electrochromic layer in registry with said segmented electrodes.

4,253,742

ELECTROCHROMIC DISPLAY CELL

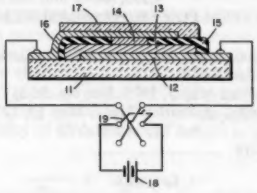
Hiroshi Morita, Machida, Japan, assignor to Toshiba Corporation, Kawasaki, Japan

Filed Aug. 29, 1979, Ser. No. 70,706

Claims priority, application Japan, Sep. 25, 1978, 53-116710

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **8 Claims**



1. In an electrochromic display cell comprising

a display electrode;

a counter electrode facing said display electrode;

an electrochromic layer and an ion conductive solid electrolyte layer situated between said electrodes, the improvement comprising said ion conductive solid electrolyte layer being formed from materials selected from the group consisting of Li_3N, $Li_{2+x}C_{1-x}B_xO_3$, $Li_{4+x}Si_{1-x}P_xO_4$ and $Li_{5+x}AG_{1-x}Si_xO_4$ where $0<x<1$, wherein the charge carrier through said electrolyte layer is lithium ion.

4,253,743

EYE TESTING INSTRUMENT

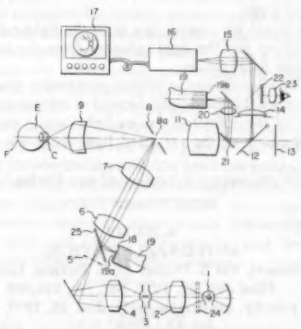
Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1978, Ser. No. 902,906

Claims priority, application Japan, May 17, 1977, 52-56939; May 18, 1977, 52-57450

Int. Cl.³ A61B *3/10, 3/14*; G03B *29/00*

U.S. Cl. 351—7 **8 Claims**



6. An eye testing instrument comprising:

an eye photographing system for photographing the fundus of an eye to be inspected, said system including an objective lens adapted to oppose the eye, an image forming lens for cooperating with said objective lens to form an image of the eye fundus on photosensitive means, illuminating means for illuminating the eye fundus, and means for observing the imaging surface of said image forming lens;

a mark projecting system for projecting an image of a mark on the anterior part of an eye through said objective lens; and

an image transmitting system, having an input surface optically conjugate with the anterior portion of the eye with

respect to said objective lens, for transmitting the image of the mark to said observing means;

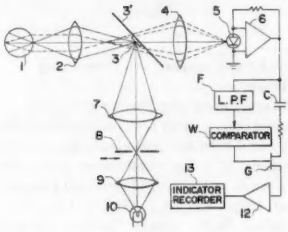
wherein, when the positioning between said instrument and the eye is correct, a sharp image of the mark appears in said observing means, and when the positioning is not correct, an unclear image appears therein.

4,253,744

OPTICAL SYSTEM FOR LIGHT MEASUREMENT OF AN EYE FUND

Seiji Sawa, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 7, 1979, Ser. No. 36,311
Claims priority, application Japan, May 12, 1978, 53-56742
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—16 **9 Claims**



8. An improved eye fund optical measuring system for providing a continuous measurement of the condition of blood in the eye fundus by measuring the light reflected from the eye fundus, comprising;

a light source at a finite distance from a position at which an eye of a patient is to be measured;

first means for converging the light from the light source at a focal point substantially coincident with the exterior surface of the cornea of the eye, and having a cross-sectional area considerably smaller than the pupil area of the patient's eye;

second means for converging both the light reflected from the cornea and the light reflected from the eye fundus at separate focal points;

means for eliminating the further progressive transmission of the cornea reflected light, located at substantially the focal point of the reflected cornea light, while permitting the transmission of the reflected light from the eye fundus, and

means for measuring the reflected eye fundus light.

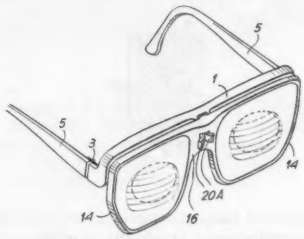
4,253,745

ANTI-DAZZLE DEVICES

Alfredo Bizzarri, Via S. Donato 14/5, Firenze, Italy

Filed Jun. 22, 1978, Ser. No. 918,095
Claims priority, application Italy, Jun. 28, 1977, 9501 A/77
Int. Cl.³ G02C *7/10*
U.S. Cl. 351—45 **2 Claims**

1. A device for preventing the eyes of a user from being dazzled by the lights of an oncoming vehicle, said device comprising: a spectacle-type frame; lens support means carried by the frame; anti-dazzle lenses carried by the support means and having a transparent material and a plurality of substantially horizontal, parallel non-transparent, dull, light-intercepting strips embedded within said transparent material intermediate adjacent layers of said transparent lens material, each of said strips being inclined forwardly and downwardly; interlocking means detachably mounting the support means for selective pivotal movement relative to said frame about a substantially horizontal axis to permit the angular position of said lenses to be adjusted and locked in a plurality of incrementally angularly spaced positions relative to the normal position of the head in direct line with the eyes of the user to provide the required anti-dazzle effect, and the spacing of the strips



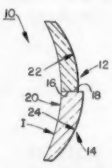
being such as to cause said strips to intercept oncoming dazzling beams without a substantial change in the position of the head.

4,253,746

PROCESS FOR FORMING A MULTIFOCAL LENS AND LENS FORMED THEREBY

Edward H. Phillips, 30 King George Rd., Warren, N.J. 07060

Filed Jan. 24, 1979, Ser. No. 6,257
Int. Cl.³ C03B *11/08, 23/22;* G02C *7/06*
U.S. Cl. 351—168 **17 Claims**



13. An edge-fused multifocal lens comprising:

a first lens portion which is ground and polished to correct a first vision defect;

a second lens portion which is ground and polished to correct a second vision defect;

each of said lens portions having longitudinal edges which are essentially planar, said longitudinal edges being ground so that the longitudinal edges of said first lens portion are essential duplicates of the longitudinal edges of any second lens portion and said longitudinal edges can be flushly fit and precision matched against each other;

said first and second lens portions being pressed together in edge abutting relationship with each other; and

said first and second lens portions being fused together at said abutting edges to form a single multifocal lens.

4,253,747

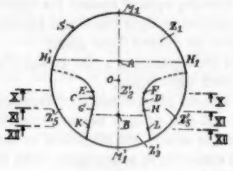
METHOD OF PREPARING A REFRACTIVE SURFACE OF A PROGRESSIVELY VARIABLE FOCAL POWER OPHTHALMIC LENS

Bernard Maitenaz, Joinville le Pont, France, assignor to Essilor International (Compagnie Generale d'Optique), Creteil, France

Filed May 9, 1979, Ser. No. 37,350
Claims priority, application France, May 12, 1978, 78 14228
Int. Cl.³ G02C *7/06*
U.S. Cl. 351—169 **5 Claims**

1. A progressively variable focal power ophthalmic lens, comprising a surface of refraction which includes a substantially vertical main meridian curve having a curvature which varies progressively in accordance with a predetermined law

along at least a part of said main meridian curve, an upper zone having a first substantially constant focal power for distant vision, a lower zone having a second substantially constant focal power for near vision and an intermediate zone situated between the upper and lower zones and connected continuously therewith, said intermediate zone having a focal power which varies progressively from the first focal power at its upper limit to the second focal power at its lower limit in accordance with said predetermined law along said part of the main meridian curve, which extends substantially vertically through the three zones in their middle and is an umbilic curve at least in the intermediate zone, the difference between said second power and said first power being called the power addition, the whole of the intermediate and lower zones being divided into three horizontally spaced parts, i.e. a median part and two outer lateral parts separated from the median part by two curves which are symmetrical with respect to the main meridian curve, wherein the two curves are lines of discontinuity of the surface of refraction which is formed from two



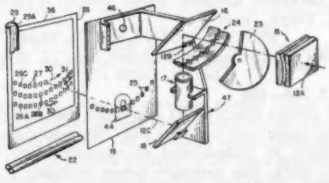
different geometric surfaces, said upper zone and said median part of the whole of the intermediate and lower zones being formed by corresponding parts of a first geometric surface selected from a first family of surfaces in which the astigmatism aberrations are concentrated outside said curves, said outer lateral parts being formed by corresponding parts of a second geometric surface selected from a second family of surfaces having, in their lateral parts, horizontal lines along which the vertical component of the prismatic effect is substantially constant, and a vertical line along which the horizontal component of the prismatic effect has a constant value and at each point of which the value of the vertical component of the prismatic effect differs at most by 0.7a with respect to the value of the vertical component of the prismatic effect at the point of said main meridian curve having the same vertical coordinate as the point considered of said vertical line, a representing said power addition, the two curves being curves of intersection of the first selected surface and of the second selected surface and being spaced at least 15 mm from each other in said intermediate zone and at least 18mm in said lower zone.

4,253,748

CARD MOTION PICTURE CAMERA SYSTEM

Philip R. Norris, North Reading, and Richard R. Wareham, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 11, 1979, Ser. No. 47,024
Int. Cl.³ G03B *41/00*
U.S. Cl. 352—82 **5 Claims**



1. Photographic apparatus for use with at least one sheet of photographic film for recording images thereon, said apparatus comprising:

means for supporting said film for movement in a give direction in a given film plane;

optical means for directing light from a photographic scene along a given optical path to said film plane to form an image thereat of relatively small area as compared to the area of the film sheet;

means for mounting said optical means for movement of at least a portion thereof along an arcuate path generally laterally of said first direction; and

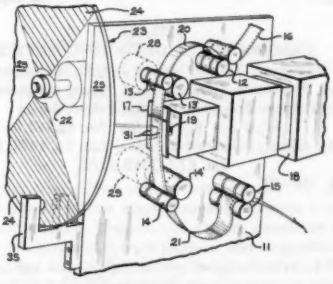
means for alternately and intermittently moving said film in its said given direction and said portion of said optical means along its said arcuate path to sequentially produce a plurality of arcuate rows of images at said film plane.

4,253,749

ELECTRONIC THEATER PROJECTOR

Angelo Boudouris, 5856 Highlandview Dr., Sylvania, Ohio 43560

Filed Sep. 24, 1979, Ser. No. 77,937
Int. Cl.³ G03B *1/24*
U.S. Cl. 352—187 **3 Claims**



1. A film transport for motion picture projector comprising a light gate including surface means for imparting a predetermined curvature to at least one picture frame on the film, film supply means for continuously delivering film at a predetermined speed, first controlled sprocket means for advancing such delivered film to said light gate, film take-up means for continuously receiving film, second controlled sprocket means for advancing film from said light gate to said take-up means, first means for controlling said first sprocket means to advance said film to said light gate, said advancing film moving clear of said surface means, and second means for controlling said second sprocket means to advance said film away from said light gate after said film is advanced by said first sprocket means at least clear of said surface means.

4,253,750

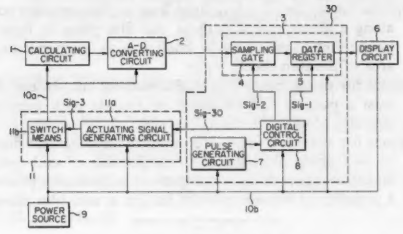
POWER SUPPLY CONTROL APPARATUS FOR CAMERA

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,145
Claims priority, application Japan, May 20, 1978, 53-59524
Int. Cl.³ G03B *7/26*; G01J *1/44*
U.S. Cl. 354—23 D **5 Claims**

1. In a camera having an electric power supply, a calculating circuit for generating an analog signal corresponding to an appropriate exposure in response to an input exposure factor such as the brightness of an object, an analog-digital converting circuit for converting said analog signal into a digital signal and sample and hold means for periodically sampling said digital signal and holding said signal for a predetermined period, and means for determining and indicating the exposure by

means of said held digital signal, a power supply control apparatus comprising power supply control means for interrupting



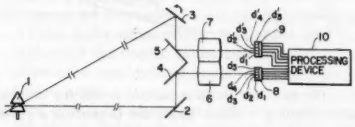
the power supply to at least either one of said calculating circuit and analog-digital converting circuit for a predetermined time within said predetermined period.

4,253,751

CAMERA FOCUS DETECTING DEVICE

Seijiro Tokutomi, Tokyo; Masao Jyojiki, Tsurugashima, and Kazuo Nakamura, Higashi, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1979, Ser. No. 46,962
Claims priority, application Japan, Jun. 14, 1978, 53-71959
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **13 Claims**



1. In a focus detection optical system in which the image of an object is divided into two images and at least one of the two images is shifted relative to the other and the two images are projected respectively onto two groups of photoelectric conversion element adapted to convert the variations in relative position of the two images into electrical signals, a focus detecting device for a lens system comprising:

calculating circuit means for providing outputs $V_{out1(m)}$, $V_{out2(m)}$ and $V_{out3(m)}$, from the outputs of photoelectric conversion elements forming said photoelectric conversion element groups, said outputs defined by:

$$V_{out1(m)} = |\log (i'_m / i_{m+1})|$$

$$V_{out2(m)} = |\log (i_m / i'_{m+1})|$$

$$V_{out3(m)} = V_{out1(m)} - V_{out2(m)}$$

where m = 1, 2, 3 . . . and (n − 1), being the number in order of said photoelectric conversion elements, n is the number of said photoelectric conversion elements forming each photoelectric conversion element group, and i_1 through i_n and i'_1 through i'_n are the outputs of said photoelectric conversion elements which are proportional to the quantities of light applied thereto, respectively;

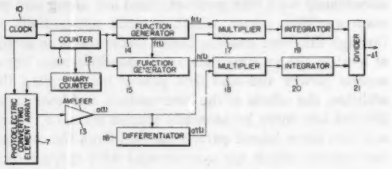
means for determining the sign of said output $V_{out3(m)}$; and means for counting the number of said outputs $V_{out3(m)}$ having the same sign.

4,253,752

FOCUS CONDITION DETECTING DEVICE

Yutaka Ichihara, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,087
Claims priority, application Japan, Sep. 27, 1978, 53/118005
Int. Cl.³ G03B *3/10*; G01J *1/20*; G01C *3/08*
U.S. Cl. 354—25 **5 Claims**



1. A focus condition detecting device comprising:

(a) an image forming optical system for converging the light from an object into a light beam and forming a light image of said object on a fixed focal plane;

(b) an element for separating a pair of light beams from said first mentioned light beam;

(c) a first and second photoelectric converting element array disposed in said pair of light beams so that the light images on said element arrays are displaced in the direction of a row of said elements in accordance with the focus condition of said light images;

(d) a first function generator for generating a first function output of smooth waveform sequentially corresponding to said first photoelectric converting element array and a second function output sequentially corresponding to said second photoelectric converting element array and having a sign reversed with respect to said first function output;

(e) a first multiplier for putting out the sum of an output resulting from multiplying the first photoelectrical output of said first photoelectric converting element array by said first function output and an output resulting from multiplying the second photoelectrical output of said second photoelectric converting element array by said second function output;

(f) a first integrator for integrating the output of said first multiplier;

(g) a second function generator for generating an output equivalent to an output resulting from differentiating one of said first photoelectrical output and said first function output;

(h) a second multiplier for multiplying the other of said first photoelectrical output and said first function output by the output of said second function generator;

(i) a second integrator for integrating the output of said second multiplier; and

(j) a divider for dividing the output of said first integrator by the output of said second integrator.

4,253,753

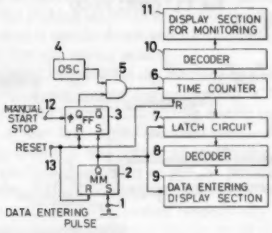
DATA ENTERING CAMERA

Akira Takahashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,649
Claims priority, application Japan, Nov. 22, 1978, 53-144735
Int. Cl.³ G03B *17/24*
U.S. Cl. 354—106 **6 Claims**

1. A camera which enters stop watch data on a photographing film, comprising a camera body, film positioning means for positioning an undeveloped photographic film within said camera body, film exposure means including a shutter for exposure of said film under operator control, a stop watch time counter within said camera body and having a display means positioned within the camera body so that the stop watch time

may be recorded on said film, start means to start the timing of the stop watch, intermediate lap means which is automatically responsive to operation of the shutter and which exposes the film to the display means synchronous with the shutter operation and without stopping the stop watch timing; manual reset



stop means to stop the timing of the stop watch under operator control and unsynchronous with shutter operation; and means to synchronize the operation of the said shutter with the said start means so that the film is exposed synchronously with the shutter operation at the start of the stop watch timing and during its timing.

4,253,754

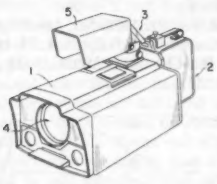
MIRROR-SHUTTER DEVICE IN SINGLE-LENS REFLEX CAMERA

Satoshi Ishihara, Urawa, Japan, assignor to Mamiya Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 91,827

Int. Cl.³ G03B *19/12*

U.S. Cl. 354—154 **5 Claims**



1. In a single-lens reflex camera having a photographic optical system, a finder optical system, a film magazine, and a mirror which is movable between a first position for reflecting light rays passing through the photographic optical system to the finder optical system and a second position for permitting light rays to pass to the film magazine, the combination therewith of a mirror-shutter device comprising:

a leading shutter supporting the mirror and hinged about a hinge axis to swing between third and fourth positions thereof to move the mirror between the first and second positions, respectively;

a trailing shutter hinged about the same hinge axis to swing between fifth and sixth positions thereof at which the trailing shutter is in close contact with the leading shutter at the third and fourth positions, respectively;

spring means for continually urging the leading and trailing shutters to swing mutually together into said close contact;

driving means activated by a shutter release device of the camera to drive the leading shutter from the third position to the fourth position and thereafter to return the leading shutter from the fourth position to the third position; and

locking means for releasably locking the trailing shutter in the fifth position, said locking means comprising a stud member fixed to the trailing shutter, latch means having a catch edge against which the stud member is normally caught and locked, resilient means urging the latch means to the stud member, intercoupling means for operating the latch means so as to cause the same to release the stud member, when the leading shutter has driven from the third position substantially to the fourth position during a specific interval, thereby to release the trailing shutter to permit the same to swing after, and closely contact the leadng shutter under the force of the spring means, and stationary buttressing means for buttressing the stud member, when the trailing shutter is at the fifth position, to place the stud member at a constant position relative to the latch means thereby to assure regular release timing thereof.

4,253,755

CAMERA SHUTTER

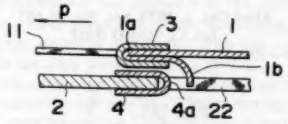
Minoru Sekida, Sakai; Akira Fujii, Osaka; Toshio Kobori, Sakai, and Tougo Teramoto, Wakayama, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1978, Ser. No. 901,051

Claims priority, application Japan, May 11, 1977, 52/58826[U]

Int. Cl.³ G03B *9/32, 9/40*

U.S. Cl. 354—242 **6 Claims**



1. A shutter device for a camera comprising:

first and second shutter means movable between a cocked retracted position wherein said shutter means are biased and a discharged advance position and respectively including first and second shutter curtains formed of flexible material, said first and second shutter curtains including light-shielding body portions and end border portions which overlap each other when said shutter means are retracted from the discharged position to said cocked position;

an edge cover member of substantially U-shaped cross-section clamping said end border portion of said first shutter curtain; and

a light-shielding means separate from said edge cover member and having a projection positioned in the vicinity of said end border portion and projecting towards said second shutter means and having its outermost portion remote from said first shutter curtain positioned within the path of movement of said second shutter curtain.

4,253,756

THREE OPERATIONAL MODE CAMERA

Hiroshi Kurei, Kawagoe, and Tahei Morisawa, Matsudo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,689

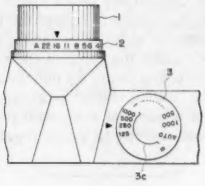
Claims priority, application Japan, Feb. 23, 1979, 54/22511[U]

Int. Cl.³ G03B *7/08, 17/20*

U.S. Cl. 354—289 **4 Claims**

1. A camera including an automatic exposure control mechanism for aperture-priority and shutter-speed-priority and a manual exposure control mechanism for manually setting an aperture value and a shutter speed comprising: a three-photographing mode switching means having an indication member operated in association with a photographing mode switching member, said indication member having a series of control regions including an aperture-priority automatic exposure control region, a shutter-speed-priority automatic exposure

control region divided into parts corresponding to available shutter speed values, and a manual exposure region divided into parts corresponding to said available shutter speed values,



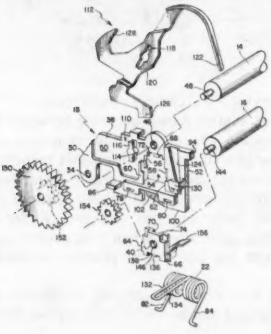
said manual exposure region confronting a stationary index means so that said camera is set in an operational mode corresponding to an indication obtained by continuous displacement of said photographing mode switching member.

4,253,757

SPREAD ROLLER ASSEMBLY

Harvey S. Friedman, Sudbury, and Leon Rubinstein, Natick, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,407
Int. Cl.³ G03D *9/02*
U.S. Cl. 354—304 **9 Claims**



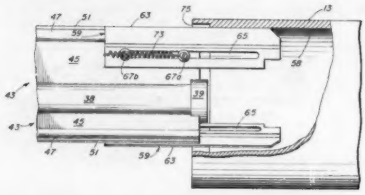
1. Photographic apparatus comprising:
a housing including means for defining a passageway leading to the exterior of said housing;
first and second elongate rollers adapted to spread a processing liquid across a layer of an exposed film unit, as it moves therebetween, so as to initiate the formation of a visible image in the film unit;
support means mounted adjacent opposite sides of said housing, each of said support means including a fixed bearing for rotatably receiving an end of said first elongate roller, a movable bearing for rotatably receiving an end of said second elongate roller such that said rollers are located in juxtaposed relation with each other, and means for guiding said movable bearing toward and away from said fixed bearing so as to vary the gap between said first and second rollers;
means for resiliently biasing said movable bearings toward said fixed bearings thereby urging said second roller toward said first roller; and
film engaging means extending from at least one of said movable bearings and movable toward a wall of said passageway, as the film unit moves out of engagement with said first and second rollers, for cooperating with said wall to grasp the film unit by one of its ends while its opposite end extends to the exterior of said passageway.

4,253,758

EXTENDER GUIDES FOR PHOTOCONDUCTIVE DRUM REMOVAL

Raymond G. Cormier, Nashua, N.H., assignor to Nashua Corporation, Nashua, N.H.

Filed Jul. 9, 1979, Ser. No. 56,130
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DR **10 Claims**



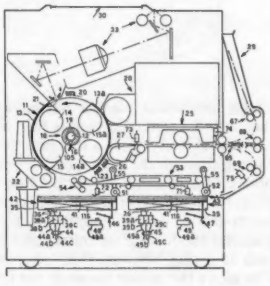
10. In a photocopying apparatus having a drum member rotatable about a central axial support member, apparatus for aiding in the axial removal of said drum member from its operating position in said photocopying apparatus, comprising;
drum guide means carried on said central axial support member, said drum guide means having a drum guide surface and being movable between
an inoperative stored position wherein said guide means is maintained within the drum interior, and
an operative guiding position wherein said guide means guide surface is positioned for guiding removal of said drum member from said central axial support member.

4,253,759

COPY MACHINE HAVING DUPLEXING FEATURE

Luciano Rattin, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Nov. 21, 1978, Ser. No. 962,676
Claims priority, application Italy, Nov. 25, 1977, 69657 A/77
Int. Cl.³ G03G *15/00, 15/22*
U.S. Cl. 355—14 SH **6 Claims**



1. Electrophotographic copying machine comprising:
a photoconductive member;
means for cyclically moving said photoconductive member along an endless path;
a plurality of stations positioned adjacent and regularly spaced along said endless path for the execution of the usual copy process steps, including:
a member charging station, a member developing station, a transfer station, a copy sheet pick off station and a member cleaning station;
a copy sheet fixing station spaced apart from said endless path;
first and second, selectively enabled, copy sheets supply stations spaced apart from said endless path;

first conveying means for conveying a copy sheet along a copy sheet path starting from said first or second supply station and passing through said transfer, pick off and fixing stations in order;

storage means in each of said supply stations for storing a stack of copy sheets;

a feeding device in each of said supply stations, including means for picking up the first sheet of the stack and means for turning it upside down and for thereafter delivering it to said first conveying means;

means defining an exit from the machine to a sheet collector;

second conveying means for conveying a finished copy sheet from the output of the fixing station into the storage means of said first supply station;

deflecting means at the output of said fixing station selectively positioned in a first or second position in which it deflects a finished copy sheet toward said exit or toward said second conveying means, respectively;

means for defining a simplex or duplex mode of operation for the machine;

selecting means for enabling said first or second supply stations in said simplex mode of operation;

means for setting a desired number of copies;

copy cycle executing means actuable for the execution of a number of copy cycles equal to said desired number, during each of which a copy sheet fed from the enabled supply station is imaged along a copy sheet path and delivered at the output of said fixing station;

first control means enabled in said simplex mode for positioning said deflector in said first position and for thereafter actuating said copy cycle executing means;

second control means, enabled in said duplex mode of operation for positioning said deflector in said second position, for enabling said second supply station and for thereafter actuating said executing means whereby the desired number of one-side imaged copy sheets are stored in the storage means of said first supply station; and

third control means, enabled in said duplex mode after completion of operation of said second control means, for positioning said deflector in said first position, for enabling said first supply station and for thereafter actuating said executing means, whereby the desired number of both sides imaged copy sheets are delivered to said exit, said deflector having a third position in which it deflects finished copy sheets towards a sorter-exit of the machine and means for selectively positioning said deflector in said third position in said simplex mode, or in said duplex mode, during operation of said first or third control means, respectively.

4,253,760

ELECTROPHOTOGRAPHIC APPARATUS FOR PRINTING MULTIPLE COPIES OF AN IMAGE ON A PHOTOSENSITIVE MEMBER

Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,627

Claims priority, application Japan, Apr. 18, 1978, 53-7803

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CU **21 Claims**

1. An electrophotographic apparatus for forming and desired number of copies from the same and single electrostatic charge latent image corresponding to a document comprising

a photosensitive member arranged movably;

means for driving the photosensitive member;

means for substantially uniformly charging the photosensitive member;

means for projecting an image of a document onto the charged photosensitive member to form an electrostatic charge latent image;

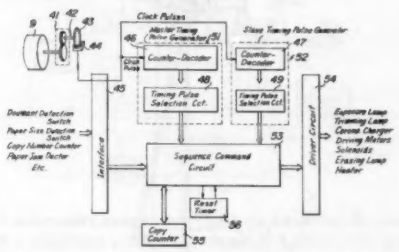
means for developing the latent image with toner particles to form a toner image;

means for transferring the toner image onto a record paper;

means for setting a desired copy number to be formed from the electrostatic charge latent image once formed on the photosensitive member;

means for storing the copy number set in said setting means;

means for producing a load signal in response to which the copy number set in the setting means is loaded into said copy number storing means; and



means for controlling the operation of the driving means, charging means, projecting means, developing means and transferring means in accordance with the copy number stored in the copy number storing means;

whereby after the copy number has been transferred from the setting means into the copy number storing means, any desired copy number to be formed for a next document can be set in the copy number setting means.

4,253,761

CLEANING DEVICES FOR USE IN ELECTROPHOTOGRAPHIC APPARATUS

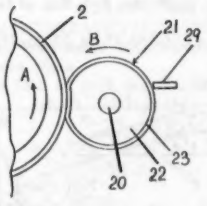
Tatsuji Takizawa, Yokohama, and Nobutaka Noda, Kawasaki, both of Japan, assignors to Kabushiki-Kaisha KIP, Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,249

Claims priority, application Japan, Apr. 17, 1976, 51-44116

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **10 Claims**



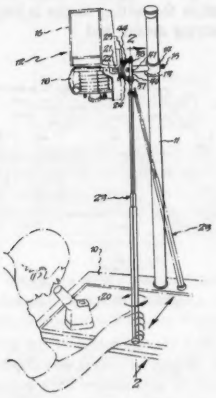
1. A cleaning device for use in an electrophotographic apparatus which has a photosensitive element provided with a surface layer of polyethyleneterephthalate on which a toner image of positive polarity is formed, characterized in that there is provided a cleaning means comprising a resilient inner member driven relative to said element and an outer member made of a polyethylene material into which toner can not enter and provided on said inner member to contact with said surface layer of said element such that triboelectrical charges of negative polarity are generated on said outer member thereby transferring the residual toner on said surface layer of said element to said outer member, and there being further provided a scraping member engaged with said outer member to remove the toner therefrom.

4,253,762

PHOTO ENLARGER REMOTE FOCUSING CONTROL

Walter J. Barrett, 341 E. 6th St., Apt. 4A, New York, N.Y. 10003

Filed Nov. 8, 1979, Ser. No. 92,567
Int. Cl.[3] G03B *27/52*
U.S. Cl. 355—55 **5 Claims**



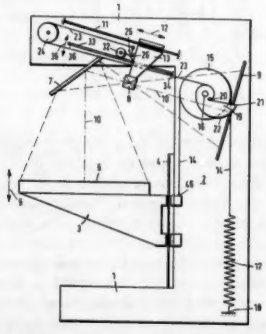
1. Adjusting means for operating the focusing shaft and the shaft adjusting knob of a photographic enlarger from a relatively remote point comprising rod means extending generally at right angles to the focusing shaft of the enlarger, a chuck member rotatably connected to said rod means adjacent to one end thereof and concentrically with respect to said focusing knob and adapted to be releasably attached to said knob, and a bevel gear connection between one end of said rod means and said chuck member whereby the user may rotate the rod means from the other end thereof to rotate the focusing knob and shaft from a point relatively remote from said focusing knob.

4,253,763

REPROGRAPHIC CAMERA

Karl Schleifenbaum, Haiger, Fed. Rep. of Germany, assignor to Meteor-Siegen Apparatebau, Siegen, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,088
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842479
Int. Cl.[3] G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 **13 Claims**



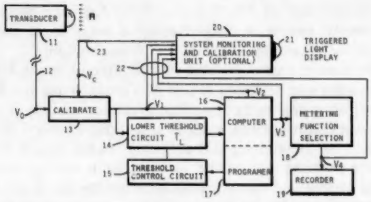
1. A reprographic camera comprising a table for the original subject, an objective and an image frame, which are movable relatively to one another in order to produce images or reproductions of an original on a variable scale, one of these structural parts remaining in a fixed position, a first traction member connected to one of said parts for moving said one of said parts, and a second traction member connected to a second one of said parts for moving said second one of said parts, a transmission member coupling the movement of the traction members such that the ratio of the length of their displacements changes gradually throughout their ranges of movement, and a correcting member connected to said second traction member which alters the effective length of the second traction member by an amount which is dependent on the position of said one of said movable structural parts.

4,253,764

SOLAR ENERGY METERING AND RECORDING SYSTEM

Ralph A. Morrill, 2935 NW. Satinwood St., Corvallis, Oreg. 97330

Filed Feb. 10, 1978, Ser. No. 876,935
The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.
Int. Cl.[3] G01J *1/42, 5/48, 5/00*
U.S. Cl. 356—225 **8 Claims**



1. A system for directly metering and recording the energy density or power potential of incident solar energy comprising:

a. a transducer means for detecting the presence of solar energy and which means is solar windowed unidirectional, embodies an ideal absorber, is ambient temperature compensated and responsive to and accurately follows the radiant intensity levels of the sun to generate or to otherwise produce a voltage that is a precise linear function proportional to the radiant intensity of the incident solar energy,

b. a lower threshold means connected to the transducer means which may be enabled and adjusted as desired to initiate the metering and recording of the solar energy levels to only that above a preset lower intensity limit, or optionally not enabled,

c. a computing means connected to the threshold means and transducer means which accurately computes the solar energy-density levels in a precise mathematical relationship which means may be programed for a variety of computational functions,

d. a programing means connected to the computing means by which the computer may be versatilely programed for numerous computational functions required to correct for atmospheric density, latitude or altitude, replicate descrete or combined performance characteristics of typical or known solar Energy Collector Systems or other solar powered devices, with which means the threshold limits are selected or enabled and by which means the energy-density level of the radiant intensity of the sun may be programed for computation into specific energy or power measurement values,

e. a metering function selection means connected to the computing means by which to selectively adjust the values of energy-density, energy or power levels computed to the desired units and scales appropriate to the charac-

teristics of the recording of thermal, electrical or mechanical energy or power units of measure,

f. a recording means connected to the metering function selection means composed of a mercury coulometer by which the sum-total of the instantaneous energy or power levels metered may be integrated continuously over a desired period of time, which recording means may be easily reset for any subsequent period of time, additional outputs may be provided from this means for connection to a common brush recorder, magnetic tape recorder or the like where the advantage of the mercury coulometer recorder are not desired,

g. a optional system monitoring means connected to appropriate points within the aforesaid system means by which the instantaneous values of solar radiant intensity, energy-density, energy or power levels may be selected sequentially for display and measurement on a typical display device such as the face of a common moving coil-permanent magnet meter,

h. an optional system calibration means which embodies an adjustable known voltage source that may be introduced at any appropriate point within the aforesaid system means, while simultaneously monitoring other selected points within the system using the preceeding system monitoring means, so as to calibrate the system to assure proper operation and accuracy of the data, facilitate adjustment of each system function or programing selection, and as a means of fault location diagnosis and maintenance,

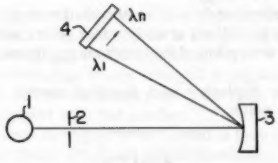
j. appropriate power supply means as are necessary for proper system operation.

4,253,765

MULTI-WAVELENGTH SPECTROPHOTOMETER

Iwao Kato, Mito, and Shigeru Sonobe, Katsuta, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 22, 1979, Ser. No. 14,277
Claims priority, application Japan, Feb. 22, 1978, 53/18479; Feb. 24, 1978, 53/19658
Int. Cl.³ G01J *3/28*
U.S. Cl. 356—328 **8 Claims**



1. A multi-wavelength spectrophotometer comprising:

an entrance slit;

dispersion means for dispersing light through said entrance slit into various components at different wavelengths;

self-scanning detector means for receiving the light from said dispersion means to detect the quantity of the received light, the range of wavelengths to be scanned by said detector means being divided into plural wavelength subranges; and

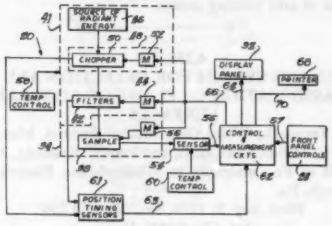
scanning means for scanning said wavelength subranges of said detector means with different integration times respectively.

4,253,766

OPTICAL GRAIN ANALYSIS INSTRUMENT

David B. Funk, Auburn, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 833,451, Sep. 15, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,635
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—418 **34 Claims**



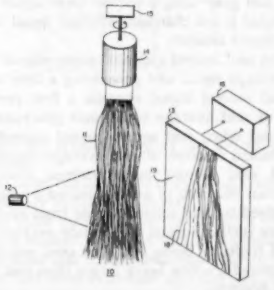
1. A commodity analysis instrument for measuring the quantity of a constituent present in a sample of a commodity comprising a sample receptacle for receiving said sample, a radiant energy source, means for rotating the sample receptacle so as to bring a substantially contiguous segments of the sample surface repeatedly into registry with the radiant energy source for providing reflected radiant energy therefrom, filter means including a plurality of filter elements and mounted between said sample receptacle and said radiant energy source, each of said filter elements passing a predetermined frequency of radiant energy, stepping means for sequentially moving each of said filter elements to a stationary position in registry with the rotating sample receptacle for a predetermined increment of time for providing said reflected radiant energy at each of said predetermined frequencies, chopper means mounted between said source of radiant energy and said filter means for passing said radiant energy through each filter element at a plurality of discrete intervals, sensor means adjacent said sample receptacle for receiving said reflected radiant energy at each said discrete interval and for providing electrical signals corresponding thereto and circuit means for receiving said electrical signals and providing an indication therefrom corresponding to the quantity of said constituent present in said sample.

4,253,767

PHOTO-INTEGRATED DENSITOMETER

Giorgos X. Gikas, Washington, D.C., assignor to The Gillette Company, Boston, Mass.

Filed Dec. 20, 1979, Ser. No. 105,459
Int. Cl.³ G01N *21/84*
U.S. Cl. 356—426 **8 Claims**



1. Apparatus for indicating degree of adhesion between hair fibers of a hair tress comprising:

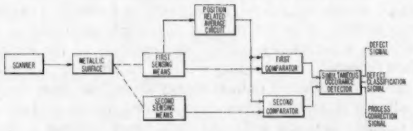
a light source for transmitting a light beam;
light detecting means providing an electrical signal proportional to intensity of incident light from said light source transmitted through said hair tress;
holding means rotatably driven by a motor to provide an angular displacement of said hair tress relative to said light source; and
circuit means electrically connected to said light detecting means for integrating said electrical signal over one revolution of said holding means.

4,253,768

PROCESSING SYSTEM FOR DETECTION AND THE CLASSIFICATION OF FLAWS ON METALLIC SURFACES

Nicholas Yaroshuk, White Oak; Miklos Sarkozi, Murrysville; Robert C. Miller, Penn Hills, and Paul G. Kennedy, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 9, 1978, Ser. No. 932,235
Int. Cl.[2] G01N *21/32*
U.S. Cl. 356—431 **10 Claims**



1. In an automatic surface scanning method of the type in which surfaces have been subjected to at least two manufacturing steps, said method utilizing advancing a surface past a source of electromagnetic radiation, directing said electromagnetic radiation toward said surface, sensing reflected radiation from said surface with electromagnetic-radiation sensing means, and effectively scanning at least one of said source and said radiation sensing means across said surface generally transverse to the direction in which said surface is advanced to produce a series of serial scan signals, an improvement utilizing defect classification, said improvement comprising:

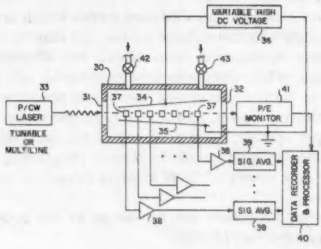
a. using a first radiation sensor and a second sensor, each sensor generating a signal which is a function of the amount of radiation received;
b. adjusting the relative position of said radiation source and said sensors so that an essentially defect-free surface reflects radiation principally to said first sensor and reflects a measured amount of radiation to said second sensor;
c. generating a first sensor, position-related, average signal;
d. comparing said first sensor signal to said average signal and generating a first error signal if said first sensor signal exceeds said average signal by a first predetermined amount, and generating a second error signal if said first sensor signal is less than said average signal by a second predetermined amount;
e. comparing said second radiation sensor signal to said first sensor average signal and generating a third error signal when said second signal exceeds a first predetermined fraction of said average signal and generating a fourth error signal when said second signal exceeds a second predetermined fraction of said average signal, both said first and said second predetermined fractions being greater than the ratio of said measured amount of radiation received by said second sensor from said essentially defect-free surface to said first sensor average signal and both said fractions being less than one, and said second predetermined fraction being larger than said first predetermined fraction;
f. detecting the essentially simultaneous occurrence of at least two preselected conditions involving at least two of said error signals to provide defect classification signals;
g. utilizing said classification signals to indicate rejection of said surface and to indicate the defect classification; and
h. utilizing at least one of said classification signals to indicate to at least one of said at least two manufacturing steps that there has been an occurrence of a classification defect, whereby process control can be implemented to minimize the future occurrences of said classification defect.

4,253,769

STARK EFFECT SPECTROPHONE FOR CONTINUOUS ABSORPTION SPECTRA MONITORING

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Michael J. Kavaya, San Gabriel, Calif.

Filed May 30, 1980, Ser. No. 154,726
Int. Cl.[3] G01J *1/00*
U.S. Cl. 356—432 **10 Claims**



5. Apparatus for gas analysis using the Stark effect comprising

means for generating a beam having at least one predetermined spectral line frequency,
a gas sample cell in the path of said beam, said cell having windows for said beam to pass, and electrically isolated plates disposed on opposite sides of said beam and diverging with respect to each other to form an electric field which varies,
means for applying a constant bias voltage to said plates to create an electric field between said plates which will adjust the absorption line of a predetermined constituent suspected to be present in said gas sample into coincidence with said laser spectral line at one of a plurality of distinct points along said beam path,
means for modulating the absorption by said gas sample of the beam's energy,
means for separately sensing absorbed energy variations of said gas in said cell at said distinct points, while modulating the absorption of the laser's energy by said gas sample, and
means for displaying said absorbed energy variations at distinct points.

4,253,770

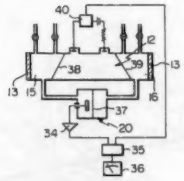
OPTOACOUSTIC ANALYZER

Atsushi Horiba, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jul. 24, 1978, Ser. No. 927,095
Claims priority, application Japan, Aug. 26, 1977, 52/103091
Int. Cl.[3] G01N *21/59*
U.S. Cl. 356—433 **4 Claims**

1. An optoacoustic analyzer comprising a gas laser resonator defined by two resonator mirrors, a gas laser discharge tube including spaced windows located within said resonator, an optoacoustic detector including a sample chamber and a reference chamber which are disposed in the path of laser light between the resonator mirrors, the laser discharge tube being arranged between the sample chamber and the reference cham-

ber, each of the chambers being defined on one side by one of the resonating mirrors and on the other side by one of the windows of the discharge tube, the sample and reference chambers cooperating to form a differential cell and to provide a detector output signal which represents the pressure differ-



ence between the sample and the reference chamber due to the different absorption of the laser light in the chambers, a discharge interrupter associated with the gas laser discharge tube to provide an interrupter output signal which is passed to a lock-in amplifier to rectify the detector output signal in synchronization with the interrupter output signal.

4,253,771

MIXING APPARATUS

Paul Renk, Troisdorf, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid Lennep, Fed. Rep. of Germany

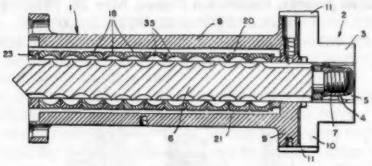
Continuation-in-part of Ser. No. 620,783, Oct. 8, 1975, Pat. No. 4,128,342. This application Nov. 28, 1978, Ser. No. 964,286

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1974, 7433808[U]

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.³ A21C *1/06*; B01F *7/24*

U.S. Cl. 366—89 **8 Claims**



1. An apparatus for mixing materials such as synthetic polymers and their additives, said apparatus comprising:

a casing surrounding a cylindrical rotor,

a series of groove rings axially arranged in sequence in said casing and end surface means placing the rings in abutting axial engagement with one another,

said groove rings having grooves formed in their peripheral working surfaces which are circumferentially separated by shearing lands and which are limited in an axial direction by said end surface means, said shearing lands and end surface means defining said grooves as a series of individual closed chambers,

a series of radially opposed grooves located on the peripheral working surface of said rotor which correspond to the grooves formed in said casing groove rings, and

said grooves formed in said casing groove rings being arranged in a partially overlapping, axially displaced relationship with respect to said radially opposed grooves on said rotor so that the material will flow between said overlapping casing and rotor closed groove chambers thereby causing repeated dispersal of the material as it moves through the mixing apparatus.

4,253,772

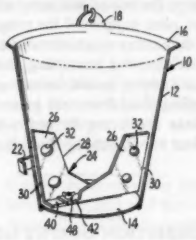
MIXING PAIL

Clement W. Burton-Smith, 112 Alta Vista Ave., Mill Valley, Calif. 94941

Filed Aug. 22, 1979, Ser. No. 68,644

Int. Cl.³ B01F *13/00*

U.S. Cl. 366—130 **5 Claims**



1. A mixing device comprising a pail, a pair of vertically disposed, planar baffles attached to the bottom of the pail, said baffles being oppositely directed with respect to each other and being symmetrically disposed with respect to an imaginary, vertical, diametral plane extending through said pail, said baffles having inner end portions disposed in overlapping relation to each other, and said baffles having inwardly and downwardly inclined inner edges which when viewed in a direction normal to said diametral plane jointly define a generally bowl-shaped baffle-free space.

4,253,773

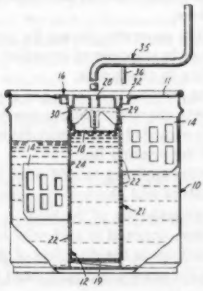
FLUID CONTAINER

Kenneth A. Aho, Chisago, and Francis M. Farrell, III, Grant Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 20, 1979, Ser. No. 67,958

Int. Cl.³ B01F *7/00*

U.S. Cl. 366—247 **9 Claims**



1. A container for shipping, storing and mixing at least two fluids, comprising:

a cylindrical outer container for containing a first fluid, said outer container including a cover,

a cylindrical inner container for containing a second fluid, said inner container having a smaller diameter than said outer container and being positioned coaxially therewith, the end of said inner container adjacent said cover of said outer container being closed by a piston and the opposite end being closed by an end seal that is removable under the pressure of fluid in said inner container when said piston is moved down said inner container, said inner

container being so formed and supported within said outer container as to permit removal of said end seal and expulsion of fluid from said inner container into said outer container upon movement of said piston down said inner container,

at least one mixing blade extending radially into said outer container and being rotatable with respect to said outer container about the axis of said inner and outer containers,

a circular drive plate supported for rotation centrally in an opening in said outer container cover, said drive plate having an axial opening permitting communication therethrough to said piston in said inner container by a pusher rod for expelling fluid from said inner container into said outer container and being formed with means coupling said drive plate to said mixing blade for rotation together.

4,253,774

INFORMATION OUTPUT DEVICE

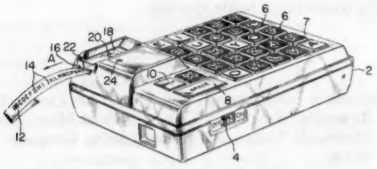
Takayoshi Hanakata, Yokohama, and Shiro Anzai, Yamato, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 763,086, Jan. 27, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,796

Claims priority, application Japan, Feb. 24, 1974, 49-21680; Feb. 24, 1974, 49-21681; Feb. 24, 1974, 49-21835[U]; Feb. 24, 1974, 49-21836[U]

Int. Cl.[3] **B41J** *3/20, 3/36, 5/10, 29/36*

U.S. Cl. 400—87 **12 Claims**



1. An information output device comprising:

a keyboard on which keys, corresponding to characters such as letters, numbers, symbols are disposed for selection of said characters;

character pattern generating means for generating character pattern signals in response to actuation of one of the keys corresponding to characters;

a print head for printing in response to the character pattern signals of said character pattern generating means, said print head is provided within said device and fixed in the direction of the printing line;

control means for applying to said print head the character pattern signals of said character pattern generating means in response to actuation of the keys;

a rotatable platen, opposed to said print head, for moving a recording medium in the direction of the printing line;

a first member for urging said print head toward said rotatable platen;

a case, having a top face of substantially the same size as that of said keyboard, for accommodating said keyboard, said character pattern generating means, said platen, said print control means and said print head;

an accommodating portion, under said keyboard in the case, for accommodating said recording medium, a pivotal cover, under said case, for accommodating said recording medium in said accommodating portion; and

a second member, responsive to the pivotal movement of said pivotal cover, for applying to said print head urged toward said platen, a force in the opposite direction to enlarge the clearance between said platen and said print head.

4,253,775

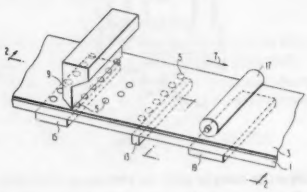
APPARATUS FOR RE-INKING A RIBBON IN A THERMAL TRANSFER PRINTING SYSTEM

Walter Crooks, Los Gatos, Calif., and Keith S. Pennington, Somers, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,164

Int. Cl.[3] **B41J** *27/12*

U.S. Cl. 400—198 **13 Claims**



1. A re-inking apparatus for a thermal printing resistive ribbon of a type including an electrically resistive substrate and a thermally fusible ink layer having ink depleted regions, the re-inking apparatus comprising:

dispensing means for adding a quantity of thermally fusible ink to said depleted regions; and

electrode means for passing a current through said resistive substrate to heat a portion of the thermally fusible ink layer of said ribbon and to fuse the added thermally fusible ink in depleted regions adjacent the heated portion of the fusible ink layer.

4,253,776

TORQUE TRANSMITTING ELEMENT AND DEVICE

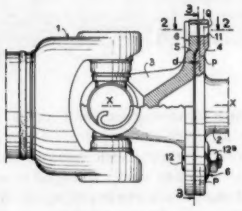
Michel A. Orain, Conflans Ste-Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed May 25, 1979, Ser. No. 42,729

Claims priority, application France, May 26, 1978, 78 15814

Int. Cl.[3] **F16D** *1/00;* **F16L** *23/00*

U.S. Cl. 403—337 **12 Claims**



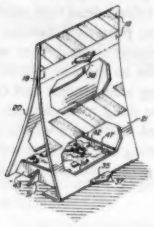
1. A connecting element for a transmission, the element having an axis of rotation and a face adjacent to which a structure is to be connected, the element defining a small number of pairs of bearing planes and an intermediate plane between each pair of planes, the two bearing planes of each pair being convergent in a direction away from said face of the element and facing axially outwardly of the element and forming two flanks of a channel or of a projection which has a constant trapezoid cross-sectional shape which is symmetrically relative to a radial plane containing the axis of rotation of the element neighbouring pairs of bearing planes being angularly spaced apart and a bolt aperture being provided in said intermediate plane between each pair of bearing planes and stopping short of the respective pair of bearing planes transversely of the intermediate plane.

4,253,777

DISPOSABLE TRAFFIC BARRICADE

Harold E. Pillifant, Jr., 3522 W. Dunlap, #214, Phoenix, Ariz. 85021

Filed Oct. 1, 1979, Ser. No. 80,470
Int. Cl.[3] E01F *13/00*
U.S. Cl. 404—6 5 Claims



1. A disposable traffic barricade comprising:

a. a first flat sheet of foldable material having a first scoreline for folding in a first direction and a second scoreline for folding in a second direction, said first scoreline forming a border of a vertical area, said second scoreline forming a border of a horizontal area when said barricade is erected;

b. said first flat sheet having a sloping surface between said scorelines when said barricade is erected;

c. a second flat sheet of foldable material having a first scoreline for folding in a first direction and a second scoreline for folding in a second direction, said first scoreline forming a border of a vertical area, said second scoreline forming a border of a horizontal area when said barricade is erected, said horizontal area extending toward the horizontal area of said first flat sheet;

d. said second flat sheet having a sloping surface between said scorelines when said barricade is erected;

e. means permanently securing the vertical areas of said first and second sheets in back-to-back contact with each other with the reflective material thereon facing in opposite directions;

f. one of said horizontal areas extending between and in contact with the sloping surfaces of said first and second sheets to maintain said second scorelines in predetermined spaced apart relation; and

g. one of said horizontal areas including edge adjacent areas foldable to an upright position to form a tray having said horizontal area on the bottom, having the sloping surfaces of said flat sheets on the ends, and having said edge adjacent areas folded to an upright position on the sides, thereby to provide a receptacle for receiving dirt or other ballast material to anchor said barricade against wind and other such forces.

4,253,778

WINCH APPARATUS FOR VIBRATING CONCRETE SCREED

Donald R. Morrison, 2109 Camp Green St., Charlotte, N.C. 28208

Filed Apr. 13, 1979, Ser. No. 29,654
Int. Cl.[3] E01C *19/38*
U.S. Cl. 404—114 1 Claim

1. A self-propelled concrete screed comprising:

(a) a base screed unit including:

(i) an elongated open frame structure comprising at least one frame unit and if more than one a group of interconnected separable frame units of similar construction each mounting a plurality of screed plates for engaging and leveling concrete as the screed is moved over the concrete;

(ii) a vibrating element comprising a semi-flexible shaft rotatively supported in said frame structure and extending for the length thereof and having means operatively associated with said shaft enabling said shaft when driven to deflect between points of support and to impart substantially uniform vibrations throughout the lengths of each of said screed plates; and

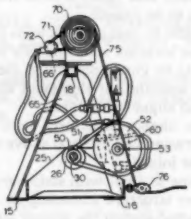
(iii) drive means mounted intermediate the ends of said base screed unit and connected to drive said shaft to impart said vibrations to said plates; and

(b) a pair of auxiliary combined winching and screed units each comprising:

(i) an elongated open frame structure of less length than said base screed unit and adapted to mate the open frame structure of said base screed unit with an equal plurality of mating screed plates for engaging and leveling concrete for the length of the auxiliary unit as an extension of the length engaged and leveled by said base screed unit;

(ii) means for detachably connecting adjacent end portions of said base screed unit and auxiliary open frame structures in fixed relationship including when desired an angular relationship;

(iii) a vibrating element comprising a semi-flexible shaft detachably connected to said base screed unit shaft at the juncture of said base screed unit and auxiliary open frame structures and rotatively supported in said auxiliary frame structure and extending for the length thereof and adapted to operate as an extension of said base screed unit shaft and to deflect and impart substantially uniform vibrations throughout the lengths of said



auxiliary unit screed plates when said base screed unit shaft is rotated by said drive means;

(iv) a recirculating fluid pump, motor, reservoir and associated piping system mounted on said auxiliary unit open frame structure with said pump being connected to be driven off said auxiliary unit shaft to drive said motor and including valve means in said piping to regulate the flow of the fluid to said motor to vary the speed thereof; and

(v) winching means mounted on said auxiliary unit frame structure including;

(a) a cable drum connected to be driven by said fluid motor;

(b) a cable wound on said drum; and

(c) cable guide means secured on said auxiliary unit frame structure enabling said cable to be withdrawn from said drum and anchored at some selected position ahead of the position of the screed preparatory to being wound on said drum by operation of said motor;

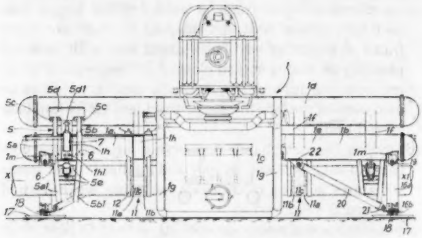
whereby when said drive means on said base screed unit operates and rotates said base screed unit shaft, said pair of auxiliary screed units mounted at the ends of said base screed unit are enabled to simultaneously level the concrete at both ends of said base screed unit and winch said base screed unit and pair of auxiliary screed units forward over the concrete being screeded at a speed and angle with respect to the work determined by the setting of said valve means and speed of said drive means.

4,253,779

METHOD FOR ALIGNING TWO SUBMERGED PIPE SECTIONS

Paul D. Grognu, Marseille, France, assignor to Companie Maritime d'Expertises S.A., Marseille, France

Filed Mar. 15, 1978, Ser. No. 886,942
Claims priority, application France, Apr. 1, 1977, 77 10498
Int. Cl.[3] F16L *1/04;* B63C *11/00*
U.S. Cl. 405—169 6 Claims



1. The method of aligning two submerged pipe sections on a sea bottom using an aligner structure having three sections one of which comprises a welding chamber and a separate pair of spaced apart pipe handling lifts, said method comprising the steps of:

positioning said lifts at points which are respectively located between twenty and thirty meters from the ends of the pipe sections to be joined;

attaching said lifts to said pipe sections to be joined;

raising said pipe sections with said lifts to position the ends of the pipes to be joined parallel to the sea bottom and in approximate longitudinal alignment with each other;

submerging said aligner structure;

positioning the aligner structures with a slight negative buoyancy between said lifts and above the ends of the pipe sections to be joined;

engaging the pipe sections with stationary chocking devices on the aligner structure extending at right angles to the pipe sections and resting the aligner structure on the pipe sections through said chocking devices with a slightly negative buoyancy; gripping the pipe sections with gripping devices on the aligner structure;

resting said aligner structure on said sea bottom with slightly negtive bouyancy while permitting the aligner structure to pivot and slide on said bottom;

visually aligning said pipe sections by actuating said gripping devices;

surrounding the ends of said pipe sections with said welding chamber and thereafter making a final alignment of said pipe ends in said chamber by maneuvering said gripping devices while said aligner structure is free to move along the sea bottom.

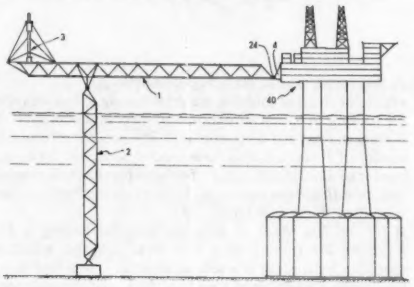
4,253,780

METHOD OF POSITIONING A FLARE SUPPORT STRUCTURE FOR A PETROLEUM PLATFORM

Claude Lecomte, Saint Herblain, and Daniel Fleury, Nantes, both of France, assignors to Ateliers et Chantiers de Bretagne ACB, Nantes, France

This PCT application filed Feb. 26, 1979, Ser. No. 14,868
PCT No. PCT/FR78/00005, § 371 Date Feb. 28, 1979, § 102(e) Date Feb. 26, 1979, PCT Pub. No. WO79/00016, PCT Pub. Date Jan. 11, 1979
Claims priority, application France, Jun. 29, 1977, 77 20033
Int. Cl.[3] E02B *17/00*
U.S. Cl. 405—202 6 Claims

1. A method of positioning a support structure adjacent to a petroleum platform located in an ocean, the support structure comprising a bridge having a first end which can support a flare or other external installation and a second end which can be connected above the water to the platform, and a biped tower hingedly connected to the bridge and being foldable to a vertical position for supporting the bridge, the said method comprising: folding the tower as a whole with respect to the bridge so as to bring the longitudinal axes of the tower legs substantially parallel to the longitudinal axis of the bridge whereby to facilitate towing of the support structure, the biped tower serving as a substantially horizontal support for the bridge during towing; providing the tower legs with pivoted, horizontally disposed, ballast dead men caissons also capable of serving as feet therefor; providing auxiliary removable floats for the tower legs at points remote from said feet; towing the folded support structure to the site where the platform is located; flexibly attaching said second end of the bridge to the platform; ballasting the dead men caissons so as to submerge them and fold the biped tower as a whole towards its vertical position while maintaining the said removable floats in operative condition; starting the ballasting of the said removable



floats after the ballasting of the dead men caissons is terminated so as to drop said dead men caissons onto the ocean bed to serve as feet for the said biped tower in its vertical support position; mooring said bridge to said platform; and recovering said removable floats.

5. Support structure for installations outside a petroleum platform comprising a rigid biped tower having non-extensible legs for supporting a bridge which supports at one of the ends of said installations, notably a flare, the bridge and the tower being connected by a pivot permitting the tower to be brought substantially horizontal beneath the bridge, the feet of the tower resting on ballastable caissons, wherein the feet of the tower are connected to said caissons by pivots with an axis parallel to that of the pivot connecting the bridge and the tower.

4,253,781

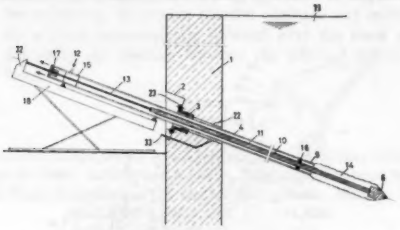
METHOD AND AN APPARATUS FOR PROVIDING A GROUTED ANCHORAGE AGAINST HYDROSTATIC PRESSURE

Joachim Fischer, Dormagen-Zons; Siegfried Brandl, Solingen, and Rudolf Bartoszek, Ratingen, all of Fed. Rep. of Germany, assignors to Philipp Holzmann Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,712
Int. Cl.[3] E02D *5/74;* E21D *20/02*
U.S. Cl. 405—260 8 Claims

1. A method of providing a grouted anchorage in a base formation including the steps of driving a tube into a base formation to a desired depth through an opening in a wall and forming a hole thereby, said tube having a forward end carrying a drill member and a rear end, driving said tube from said rear end to said desired depth, introducing an anchor rod into said tube once the desired depth of said tube has been reached, forcing liquid mortar through said tube to the said forward end of the said tube, then withdrawing said tube from said hole while simultaneously pressing said anchor rod against said drill member maintaining said drill member in said base formation, and the step of injecting material into the upper end of said

hole, said material adapted to foam and form a plug in contact with water, whereby the forward end of said hole is kept



sealed against penetration therethrough by water upon withdrawal of the said tube.

4,253,782

HOPPER WITH FLOATING CAPACITY

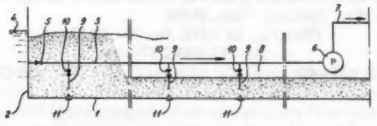
Joost Brakel, Schiedam, Netherlands, assignor to Koninklijke Volker Stevin N.V., Rotterdam, Netherlands

Filed Jul. 12, 1979, Ser. No. 57,101

Claims priority, application Netherlands, Jul. 14, 1978, 7807601

Int. Cl.³ B65G *53/30*

U.S. Cl. 406—38 **3 Claims**



1. An improved hopper with floating capacity, said hopper being provided with a pump, a suction conduit connected to the suction side of said pump and a pressure conduit connected to the pressure side of said pump for discharge of the contents, in which the suction conduit extends substantially in horizontal direction to a free end remote from said pump, the suction conduit spaced above the bottom of the hopper, and the free end of the suction conduit communicating with the water from outside the hopper, a number of suction pipes connected at one end thereof to the suction conduit and extending substantially vertically downwardly therefrom to their other ends, the other ends of said pipes being open and terminating a distance above the bottom of the hopper, wherein the improvement comprises means provided below the open ends of the suction pipes for conducting the water from outside the hopper to the suction pipes and a control valve disposed in said suction conduit between its free end and said suction pipes whereby the amount of material drawn through said suction pipes by said pump is controlled by opening or throttling said control valve.

4,253,783

AIR OPERATED CONVEYOR APPARATUS

Ronald A. Lenhart, Lakewood, Colo., assignor to Precision Metal Fabricators, Inc., Arvada, Colo.

Continuation-in-part of Ser. No. 869,371, Jan. 13, 1978, Pat. No. 4,182,586. This application Oct. 9, 1979, Ser. No. 82,650

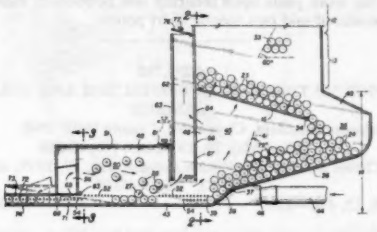
Int. Cl.³ B65G *51/02*

U.S. Cl. 406—86 **19 Claims**

1. An apparatus for receiving articles in random bulk and for discharging same serially in single file which comprises:

a pair of sidewalls held in spaced relation defining therebetween a bulk storage zone, a free air zone and an adjacent layout zone having a layout path with the sidewalls being spaced apart a distance slightly greater than the height of an article to be worked upon;

a plenum adapted to be connected to a source of air under pressure attached to either sidewall in coextensive relation, with the plenum at its extremity exhausting into the layout zone in opposition to the direction of normal flow of articles therethrough and the plenum at an intermediate



position exhausting into the free air zone in opposition to the direction of normal flow of articles therethrough;

a plurality of openings through the sidewalls communicating the plenums with the layout zone and positioned essentially parallel to the lower extremity of the sidewalls; and

exhaust means positioned intermediate the bulk storage zone and the layout zone to exhaust air from the free air zone.

4,253,784

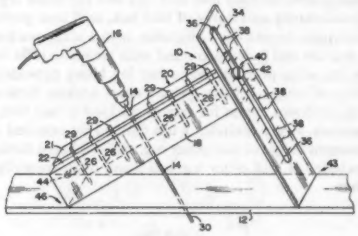
DRILL GUIDE ASSEMBLY

Robert O. Anderson, 203 Sunset Point Dr., New Port Richey, Fla. 33552

Filed Jul. 11, 1979, Ser. No. 56,455

Int. Cl.³ B23B *47/28, 39/00*

U.S. Cl. 408—115 R **5 Claims**



1. A drill guide assembly for directing a drill bit into a work piece at a predetermined relative orientation, said assembly comprising: guide means having a base and including a plurality of guide channels formed in said base, in spaced apart relation to one another and extending transversely through said base, the transverse dimension of said base and of each of said plurality of guide channels being sufficient to direct movement of a drill bit through any of said guide channels in a substantially linear path of travel into said work piece; shield means secured substantially adjacent one exterior surface of said base and including axis means disposed in aligned communicating relation to said plurality of guide channels and configured to allow passage therethrough of a drill bit into and through any one of said plurality of guide channels, said shield means formed from a material of sufficient hardness to resist penetration of the drill bit therein, positioning means movably secured to said base and disposed in supporting engagement between said base and the work piece and positioned to orient said base in angular orientation relative to the exposed working surface of the work piece, connecting means secured to at least point along the length of said base and movably engaging said

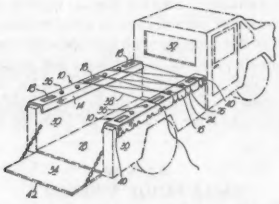
positioning means so as to movably interconnect said base and said positioning means, whereby angular orientation between said base and the work piece varies as said positioning means is moved and reoriented relative to said base, said connecting means is positionable at either of at least two spaced apart points along the length of said base, and either of said aforementioned positions is connectable with said positioning means, said base disposed in reversed angular attitude relative to the work piece upon securing said positioning means with opposite of said two spaced apart points.

4,253,785

PICK-UP TRUCK EDGE PROTECTOR AND ANCHOR MEMBER

Benjamin Bronstein, Clearwater, Canada (V0E 1N0)

Filed May 29, 1979, Ser. No. 42,958
Claims priority, application Canada, Jan. 17, 1979, 319779
Int. Cl.³ B61D *45/00*
U.S. Cl. 410—110 **2 Claims**



1. An edge protector and anchor member for an upper edge portion of a pick-up truck box side wall comprising a longitudinally extended channel member of generally U-shape in cross-section having a base and a pair of legs extending therefrom said base being adapted to set on said edge portion with one leg extending downwardly into said box and the other leg extending downwardly exteriorly of said box, said base portion having openings therein each alignable with a stake pocket in said edge portion and being provided with means to affix the member to the edge portion, said other leg being provided with a plurality of longitudinally spaced apart anchor means for receiving tie-down means for securing a load in said box, each of said anchor means includes a tab flanked by notched portions of a marginal edge of said other leg, said tab being formed from the material of said other leg and being bent inwardly of said member.

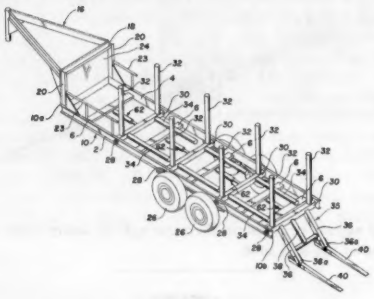
4,253,786

ARTICLE LOADING AND HANDLING DEVICE

Travis O. Harkness, Rte. 1, Box 95-A, Kaufman, Tex. 75142

Continuation-in-part of Ser. No. 826,345, Aug. 22, 1977, Pat. No. 4,182,590. This application Feb. 12, 1979, Ser. No. 11,117
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.³ B65G *67/02*
U.S. Cl. 414—24.5 **7 Claims**

1. A bale handling apparatus comprising: a frame having spaced parallel side members joined by plurality of spaced transverse connector members; wheel means operably secured to said frame to permit movement of said frame; a rearmost set of arms; means rotatably securing said rearmost set of arms between one end of the side members of said frame; a pair of tines; means pivotally securing said tines in spaced relationship on the end of the arms such that when said arms are rotated downwardly said tines are substantially parallel to the surface of the ground; means to limit movement of said tines upwardly and downwardly; a second pair of arms; means rotatably securing said second pair of arms between the side members adjacent said tines such that said second pair of arms extend vertically when said tines are parallel to the ground; means to rotate said rearmost arms and second pair of arms to lift a bale from the ground onto said second pair of arms to the frame; a third and fourth set of arms; means rotatably securing said third and fourth pair of arms between the side members of the frame and



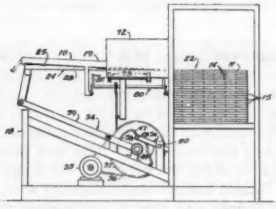
positioned substantially perpendicular to each other such that the intersection forms a center of rotation which is spaced from the second pair of arms; and means to rotate said arms to move said bale along said frame.

4,253,787

LUMBER STACKING APPARATUS

Sidney L. Lunden, and Robert E. Ulrich, both of E. 12205 Empire Way, Spokane, Wash. 99206

Filed Apr. 13, 1979, Ser. No. 29,631
Int. Cl.³ B65G *57/26*
U.S. Cl. 414—42 **15 Claims**



10. Sticker placing apparatus for use in conjunction with a layer handling apparatus for forming a stack of boards having a plurality of superimposed layers of elongated boards, in which selected layers are separated by stickers that are oriented transversely to the elongated dimension of the boards at desired sticker intervals along the length of the boards, said sticker placing apparatus comprising:

a frame adjacent the stack;

a sticker magazine means mounted on the frame for storing a plurality of stickers;

an elongated sticker indexing conveyor mounted on the frame and extending from the sticker magazine along one side of the stack to a plurality of spaced sticker stations corresponding to the desired sticker intervals for receiving a plurality of stickers from the magazine means and distributing the stickers individually to the sticker stations alongside the stack;

a sticker transfer means movably mounted on the frame and responsive to the layer handling apparatus for removing the distributed stickers from the elongated sticker indexing conveyor and lifting the stickers upward and laterally to sticker transfer positions in which the stickers are posi-

tioned transverse to the elongated dimension of the boards in the stack; and

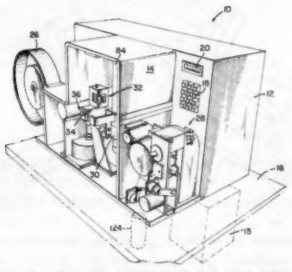
sticker holding means movably mounted on the frame and responsive to the layer handling apparatus for receiving the stickers at the sticker transfer positions and moving the stickers longitudinally forward over the stack and depositing the stickers between the selected layers of boards.

4,253,788

FILM UNLOADING AND HANDLING MECHANISM

Frank B. Oaks, Seattle, and Amos H. Ramquist, Redmond, both of Wash., assignors to CX Corporation, Seattle, Wash.

Filed Aug. 8, 1978, Ser. No. 931,954
Int. Cl.[3] B65G *65/04;* G03B *1/56*
U.S. Cl. 414—403 **32 Claims**



1. An apparatus for unloading film from an elongated cassette into a film guide, said cassette having first and second cylindrical film storage chambers spaced apart from each other by a rectangular exposure window with said first film storage chamber containing a roll of exposed film wound with a backing strip, said apparatus comprising:

a cassette support adapted to receive said cassette;

first powered means for placing an access opening of said first storage chamber adjacent an inlet of said film guide responsive to a first control signal;

second powered means for withdrawing said backing strip from said cassette responsive to a second control signal thereby conveying said film from said cassette into said film guide;

conveying means for moving said cassette from said cassette support and said backing strip from said second powered means responsive to a third control signal; and

system control means for sequentially generating said first, second and third control signals.

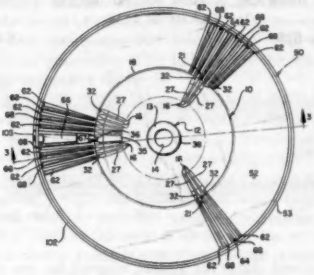
4,253,789

MINIATURE SLIDE STORAGE TRAY

Claes J. Hultgren, 334 Harris Ave., Clarendon Hills, Ill. 60514

Filed Aug. 7, 1978, Ser. No. 931,606
Int. Cl.[3] G03B *23/06*
U.S. Cl. 414—405 **9 Claims**

1. A slide storage tray for storing a plurality of slides in a compact, prearranged manner so as to minimize the space required for storage of the slides and tray, said tray comprising a circular, plate-like base having partition means thereon for maintaining a plurality of slides in segregated, radially extending relation on said base, and an abutment extending upwardly from the center of said base and providing a stop for radially locating the slides on said base, the overall diameter of said base being less then three times the length of the edge of a slide resting on the base, whereby a plurality of slides may be stored in tightly compacted relation on said tray when said slides are disposed between said partition means with one edge of each



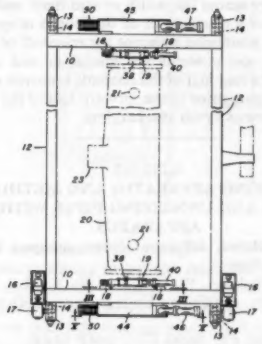
slide resting on said tray base and one other edge of each slide engaging said abutment.

4,253,790

CAR FOR CARRYING LARGE VESSELS

Richard E. Aberegg, Alliance; George H. Bell, Jr., Salem; Kendal B. Douglass, and Lee R. Reed, Jr., both of North Canton, all of Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 26, 1976, Ser. No. 745,329
Int. Cl.[3] B22D *11/10;* B65G *65/34*
U.S. Cl. 414—420 **8 Claims**



1. In a car for carrying a large vessel, which car includes a frame, a pair of saddle assemblies for supporting a vessel, and spaced apart means on said frame mounting said assemblies for vertical movement with respect to said frame, the combination therewith of an improved mechanism for raising and lowering said assemblies, said mechanism comprising a pair of fluid-pressure cylinders mounted on said frame at spaced apart locations, rack and pinion means mechanically connecting said cylinders with the respective assemblies to transmit motion from the cylinders to the assemblies, said rack and pinion means including respective rack bars mounted on said frame for lengthwise movement, top and bottom gear racks carried by said bars, means connecting said bars with the respective cylinders, gear racks carried by said assemblies at opposite sides thereof, pairs of pinion shafts journaled to said frame adjacent each assembly, driven pinions carried by said shafts meshing with the gear racks on said bars, and drive pinions carried by said shafts meshing with the gear racks on said assemblies, and means inter-connecting said cylinders for synchronizing the motion transmitted by the two cylinders.

4,253,791

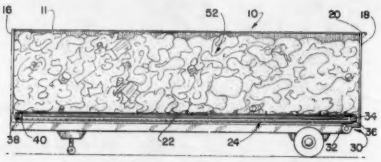
UNLOADING-TYPE CONVEYOR SYSTEM

Gerhardt Van Drie, 724 W. Pine Ave., El Segundo, Calif. 90245

Filed Aug. 3, 1979, Ser. No. 63,183

Int. Cl.³ B65F *3/24*

U.S. Cl. 414—528 **5 Claims**



1. An improved conveyor system adapted for use with a cargo-trailer-type vehicle defining a cargo box having side walls, and a floor extending longitudinally between a front wall and a rear-discharge end, whereby the stored contents therein are discharged therefrom in half loads, said conveyor system comprising:

a movable conveyor means extended about the floor of said cargo box in a continuous manner, said movable conveyor means comprising at least one pair of endless chain belts arranged in a spaced, longitudinal, parallel relationship to each other;

means operably connected to said conveyor means to move said conveyor means about said floor in a continuous manner; and

means for engaging said contents, wherein said engaging means comprises a plurality of cleat members affixed to said chains, said cleats being arranged to be disposed transversely across the width of said floor and

positioned along one quarter of the length of each endless chain, and positioned adjacent the rear half of said cargo box when said contents are loaded in said cargo box, whereby the rear half of the contents is moved rearwardly for discharging prior to the forward half of the load being moved rearwardly for discharging.

4,253,792

PIPE NESTING APPARATUS AND METHOD OF NESTING AND UNNESTING PIPES WITH THE APPARATUS

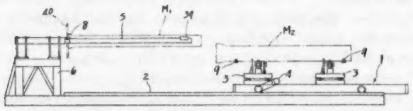
Munehiro Nishikawa, Ichikawa, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Jan. 19, 1979, Ser. No. 4,671

Claims priority, application United Kingdom, Oct. 16, 1978, 40712/78

Int. Cl.³ B65G *7/10*; B66F *11/00*

U.S. Cl. 414—589 **26 Claims**



1. A pipe nesting apparatus comprising:

a cantilever support arm adapted to be extended through a first pipe and provided with at least two spaced support points arranged on a substantially horizontal line for supporting the first pipe horizontally;

a support member having at least two spaced support points arranged on a substantially horizontal line for supporting a second pipe horizontally thereon, said first and second pipes having transverse dimensions which differ to an extent sufficient to enable one of said pipes to be nested within the other of said pipes;

lift means for vertically moving one of the support elements consisting of said support arm and said support member while maintaining said arrangement of the two support points whereby said first and second pipes can be substantially axially aligned; and

carriage means equipped with one of said support elements for moving said one element in a direction axially of the pipes between a first position in which the support arm and first pipe extend through the second pipe and a second position in which the support arm and the support member are located away from each other.

4,253,793

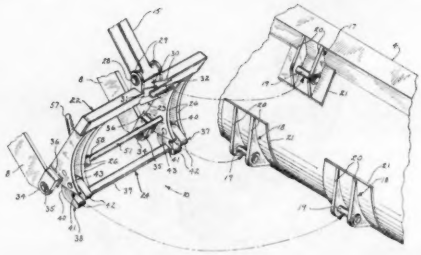
QUICK ATTACHMENT FOR LOADER IMPLEMENTS

Michael T. Braml, 6601 Zeland Ave., Minneapolis, Minn. 55428

Filed Jun. 11, 1979, Ser. No. 47,887

Int. Cl.³ E02F *3/81*

U.S. Cl. 414—723 **6 Claims**



1. A mounting unit for releasably attaching a work implement to a boom and tilt mechanism of a vehicle, comprising:

a frame having end plates and a support beam extending transversely between the upper ends of said end plates, said frame being pivotally connectable at its upper end to said tilt mechanism and at its lower end to said boom;

an upper trunnion-engaging member mounted on said frame intermediate the ends of said support beam and extending forwardly therefrom, said upper member having a saddle engageable with the upper end of said work implement to pivot said work implement about said frame upon elevation of said boom;

a pair of pawls pivotally mounted on the lower ends of said end plates for simultaneous movement from a non-engaged position out of engagement with the lower end of said work implement to an operative position engageable with the lower end of said work implement upon the pivotal movement of said work implement about the upper trunnion-engaging member; and

lock means including a pair of latches engageable with said pawls for releasably securing said pawls in said operative position.

4,253,794

METHOD OF CONTROLLING WICKET GATES OF A PUMP-TURBINE

Takao Kuwabara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,359

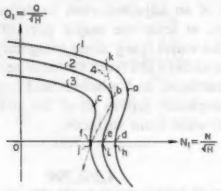
Claims priority, application Japan, Jul. 26, 1978, 52/107447

Int. Cl.³ F03B *15/02*

U.S. Cl. 415—1 **6 Claims**

1. In a hydraulic system comprising an upper and a lower reservoirs, a plurality of turbine operation means, penstock means including a plurality of pipelines each extending from the upstream side of each of said turbine operation means and communicated with said upper reservoir, and tailrace means including a plurality of pipelines each extending from the downstream side of each of said turbine operation means and communicated with said lower reservoir, at least one of the

upstream ends of the pipelines of said penstock means and the downstream ends of the pipelines of said tailrace means being connected through a multi-branched manifold to a common pipeline which in turn is connected to the corresponding reservoir, at least two of said turbine operation means including a pump-turbine with wicket gates closable and openable to control the flow of fluid through the turbine and which has S-section performance in the turbine operation area, said S-section performance being defined on an N_1 versus Q_1 performance curve drawn with a parameter of opening degree of wicket gates as that where $dQ_1/dN_1>0$ is satisfied along said performance curve, where Q_1 is the discharge through said pump-turbine per unit head and N_1 is the rotating speed of said pump-turbine per unit head, a method of controlling wicket gates of each of said pump-turbines to reduce abnormal pressure rises in



the system upon sudden reduction or removal of load which comprises the steps of:

detecting the sudden reduction or removal of load from the turbine;

in response to said detecting, closing the wicket gates down to an opening degree where said S-section is smaller in length but still exists on the corresponding Q_1 versus N_1 performance curve, for the short period while the operation point of said pump-turbine on said N_1 versus Q_1 performance curve approaches to but still remains out of said S-section; and

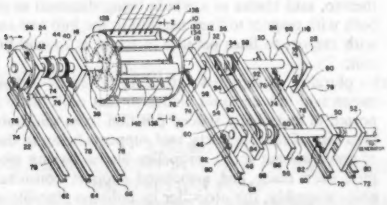
controlling the pattern of said closing so that the resultant pressure rise in said penstock means is larger than any pressure rises in said penstock means that arise thereafter during the subsequent transient state through said S-section.

4,253,795

WATER WHEEL WITH LEVEL COMPENSATING BUCKETS

Sylvester McQueen, 1405 S. 21st St., Philadelphia, Pa. 19146

Filed Feb. 16, 1979, Ser. No. 12,599
Int. Cl.³ F01D *7/00*
U.S. Cl. 415—125 **9 Claims**



1. In a rotary power system of the type comprising a rotor adapted to receive falling water to cause rotor rotation, a rotor shaft connected to the rotor and being rotated thereby, a plurality of bearings rotatively carrying the rotor shaft and a power generating shaft receiving rotative power from the rotor shaft, the improvement comprising

means to horizontally move the rotor, the rotor shaft and the bearings relative to the said falling water,

the means to horizontally move comprising a plurality of fixed beams secured in generally horizontal alignment;

the bearings comprising rollers, the said rollers being in rolling contact with the beams to facilitate horizontal movement of the bearings relative to the beams;

a spacer interconnected between the rotor shaft and the power generating shaft to maintain the spacing between the respective shafts;

a bearing interposed between the rotor shaft and the spacer whereby the rotor shaft can rotate freely of the spacer and a bearing interposed between the power generating shaft and the spacer whereby the power generating shaft can rotate freely of the spacer;

the rotor comprising a plurality of water receiving buckets and means to maintain some of the buckets in horizontal alignment as the rotor is rotated by the water;

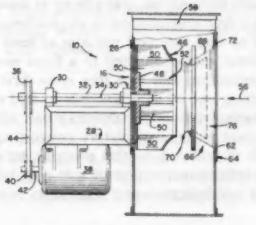
the means to maintain comprising a cam positioned adjacent to the rotor and a follower extending from a bucket whereby the trace of the cam as subscribed by the follower pivots the bucket continuously to horizontal alignment as the rotor rotates.

4,253,796

FAN OR BLOWER ASSEMBLY

Donald F. Philipps, Coon Rapids, and Richard D. Williamson, Hugo, both of Minn., assignors to The Marley-Wylain Company, Mission, Kans.

Filed Sep. 6, 1978, Ser. No. 940,121
Int. Cl.³ F04D *29/46*
U.S. Cl. 415—157 **13 Claims**



1. A fan construction comprising:

a fan housing having an air inlet opening;

a fan wheel mounted in said housing for rotation about a fan wheel axis relative to said housing, said wheel having at least one inlet side through which inlet air is admitted to said fan wheel;

inlet air duct means located between said wheel inlet opening and said housing inlet opening, said duct means movable to a selected position relative to said wheel inlet side between and including a retracted position where said duct means is spaced from said wheel inlet side and an extended position where said duct axially overlaps said fan wheel inlet side; said inlet air duct means including a first duct located at said housing inlet opening and a second duct located intermediate said first duct and said inlet side of said fan wheel and movable between said retracted and extended positions;

moving means connected between said first and second ducts to effect movement of said second duct relative to said first duct and said inlet side of said fan wheel, said moving means including a support ring for supporting said second duct; a plurality of struts secured to and extending between said second duct and said support ring; a plurality of links connecting said support ring and said first duct, each of said links having one end pivotably connected to said support ring and the other end pivotably connected to said first duct; and means for pivoting said links relative to

their pivoting axes to cause said second duct to displace along said fan wheel axis.

4,253,797

APPARATUS FOR OPERATING SHUT-OFF MEMBERS IN GAS TURBINE ENGINES, PARTICULARLY IN TURBOJET ENGINES

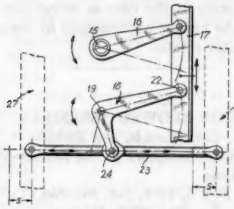
Wolfgang Weiler, Dachau, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,492

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740904

Int. Cl.[3] F04D *29/56*

U.S. Cl. 415—162 3 Claims



1. Apparatus for controlling the movement of shut-off members which can block and unblock gas-flow passages of a turbo engine to a selectable extent, comprising at least one pivotable lever having a free end portion; a circumferentially turnable ring coupled to said free end portion; at least one bellcrank having an elbow area connected to a fixed pivot so as to be swingable thereabout, and two free ends; first means articulately connecting one of said free ends to said ring; an axially shiftable actuating rod connectable to a pair of shut-off members; and second means articulately connecting the other of said free ends to said rod, so that pivoting movement of said lever is converted into rotation of said ring which is in turn converted via said bellcrank into translatory movement of said rod.

4,253,798

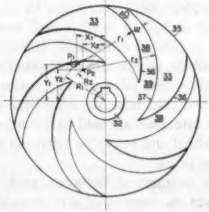
CENTRIFUGAL PUMP

Eiichi Sugiura, 149, Matsumotocho, Hekinan-shi, Aichi-ken, Japan

Filed Aug. 8, 1978, Ser. No. 931,918

Int. Cl.[3] F04D *29/22*

U.S. Cl. 415—213 R 7 Claims



1. An impeller for a centrifugal pump or the like comprising: a main disc having a center opening; an annular boss on at least one side of the disc and surrounding the center opening for attaching the impeller to a rotary shaft inserted into the center opening; and means defining a plurality of circumferentially equi-spaced fluid passages on at least one side of the disc having inlets which open at a circular open region at the disc center for admitting fluid into the passages and outlets which open at the disc periphery for discharging fluid from the passages during rotation of the impeller, said fluid passages having a constant depth and a gradually decreasing width in the direction from their inlet to their outlet and having an arcuate shape and location effective to impart increasing kinetic energy to the fluid during its flow through the passages while effectively preventing formation of fluid vortices throughout the entire length of the passages from the inlets to the outlets, said means defining said plurality of fluid passages comprising a plurality of similarly shaped vanes disposed in equi-spaced apart relation from one another about at least one side of the disc such that each two spaced-apart vanes define therebetween one fluid passage, each vane having a front surface and a rear surface with respect to the direction of rotation of the impeller, the front surface of each vane being spaced from and opposite the rear surface of an adjacent vane to define therebetween one fluid passage, at least the major part of the front and rear surfaces of the vanes lying along imaginary circles of different radii, and the radii of the front surfaces being less than the radii of the rear surfaces, and wherein said boss is positioned substantially completely within all of the imaginary circles along which lie the vane front surfaces.

4,253,799

SIDE PROPELLERS FOR THE PROPULSION OF FAST BOATS AND AIRCRAFT

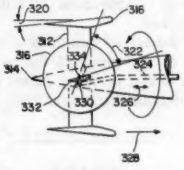
Horst Eichler, Auf dem Sande 12, 54-Koblenz-Pfaffendorf, Fed. Rep. of Germany

Division of Ser. No. 690,275, May 26, 1976, Pat. No. 4,130,378. This application Jun. 8, 1978, Ser. No. 913,801

Claims priority, application Fed. Rep. of Germany, May 26, 1975, 2523180

Int. Cl.[3] B63H *1/26*

U.S. Cl. 416—175 2 Claims



1. A variable pitch propeller for a carft which travels at high speeds through a fluid medium, the propeller comprising:

(a) a rotatable hub having an axis of rotation, said hub describing a hub circuit as it rotates;

(b) a plurality of propeller blades disposed circumferentially about said hub in radially spaced disposition with respect thereto, said blades as a whole being disposed at inclines both with respect to lines parallel to the hub axis and also with respect to lines parallel to tangents to said hub circuit;

(c) a plurality of supports extending generally radially between said hub and said blades so that each blade is supported in its radially spaced position from said hub by at least one of said supports, said supports being in the form of conventional screw propeller blades having pitch angles, each blade and associated support consitituting a blade assembly, the propeller including a plurality of said blade assemblies;

(d) said blade supports having axes of rotation which are disposed radially with respect to said hub, said blade supports being pivotally mounted on said hub for movement about said radial axes thereof, said blades being affixed to said support so as to pivotally move with said supports; and

(e) means for variably adjusting the pitch of said blade assemblies by pivoting said blade supports about said radial

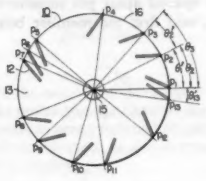
axes thereof and at the same time pivoting said blades along with said blade supports while the propeller is rotating.

4,253,800

WHEEL OR ROTOR WITH A PLURALITY OF BLADES

Yorihide Segawa, Hitachi; Fumio Fujisawa, Mito, and Koki Shiohata, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 10, 1979, Ser. No. 65,534
Claims priority, application Japan, Aug. 12, 1978, 53-97788
Int. Cl.³ F04D 29/66
U.S. Cl. 416—203 **1 Claim**



1. A wheel or rotor with a plurality of blades arranged at irregular or unequal pitch angles circumferentially of a disk, a hub or the like characterized in that the characteristic level e_k representative of the order-of-harmonic characteristic of blade pitch is defined by

$$e_k = 10 \log_e d_k + 100$$

where

$$d_k = \frac{1}{Z}\sqrt{\left(\sum_{j=1}^{Z} \cos k\theta_j\right)^2 + \left(\sum_{j=1}^{Z} \sin k\theta_j\right)^2}$$

z=a number of blades

k=1,2, . . . and n; n≧Z

θ_j=the angular position of the tip or root of each blade defined in terms of a central angle subtended at the center of a circle, which is the axis of said wheel or rotor, by an arc extended from a reference point on said circle to said tip or root of each blade on said circle, j=1,2, . . . and Z; and

said characteristic level e_k satisfies the following conditions

$$\begin{cases} 35 < e_1 < 65 \\ e - 7 < e_k < e + 7 \end{cases}$$

where

$e = -13.14 \log_{10} Z + 99.70$

k=2,3, n.

4,253,801

CONVECTION CURRENT PUMPING CALLED, SERIES CONVECTION PUMP

Louis R. O'Hare, 1041 Ponderosa #2, Fort Collins, Colo. 80521

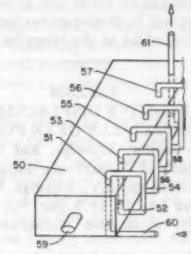
Filed Jun. 9, 1977, Ser. No. 805,005
Int. Cl.³ F04B 19/24
U.S. Cl. 417—52 **6 Claims**

1. A passive solar energy operated system comprising:

a multiple convection current production means comprising an array of several elongated cavities forming convection columns said convecting columns being of a twofold variety the one type producing convection fluid movement by means of heating and the other producing convecting fluid movement by means of cooling

and

an alternate tube connection means coupling the output fluid of a heating covection tube to the input duct of a cooling convection tube and connecting the output end of a cooling convection column to the input of yet another subsequent heating tube and so on providing a series of connected alternate heating and cooling convection tubes so



interconnected that the convection action of each tube adds to the convective flow produced by the others and, convection tube heating providing a temperature rise for the alternate tubes that produce convection current by heating

and,

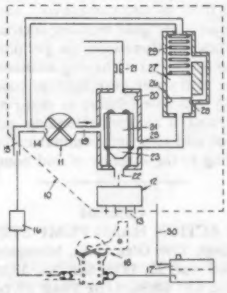
convection tube cooling means providing a temperature decline for those alternate tubes causing convection current by cooling wherein the convection tube heating means is a solar collector.

4,253,802

LIQUID FUEL INJECTION PUMPING APPARATUS

Paul E. Glikin, Maidstone, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 20, 1979, Ser. No. 59,210
Claims priority, application United Kingdom, Aug. 1, 1978, 31839/78
Int. Cl.³ F04B 23/08
U.S. Cl. 417—199 A **4 Claims**



1. A liquid fuel injection pumping apparatus for supplying fuel to an internal combustion engine and of the kind comprising a housing, an injection pump located within the housing and operable in timed relationship with the associated engine to supply fuel to the combustion spaces of the engine in turn, a feed pump in the housing for supplying fuel to the injection pump, the feed pump having an inlet port connected to a fuel inlet on the housing and an outlet through which fuel flows to the injection pump, said fuel inlet in use being connected to a

fuel supply tank, a space defined within the housing and into which fuel leaking from the injection pump can flow, an outlet on said housing communicating with the fuel supply tank, means forming a chamber, a float within said chamber, and a float controlled valve, said float controlled valve controlling the flow of fuel from said chamber to the injection pump, an inlet to said chamber from the feed pump and an outlet from the upper part of said chamber said outlet including a restricted orifice, the arrangement being such that air flowing into said chamber can be discharged from the chamber by way of said restricted orifice but in the event that air tends to collect in the chamber, the float will be depressed to close said valve thereby to prevent the flow of air to the injection pump.

4,253,803

ROTARY POSITIVE DISPLACEMENT PUMP, ESPECIALLY GEAR PUMP

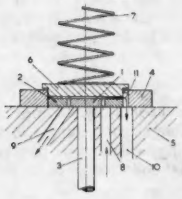
Johan G. Wormmeester, Rijswijk, and Gyula I. Baranyai, Voorschoten, both of Netherlands, assignors to Fuelmaster Produktie Maatschappij B.V., Rijswijk, Netherlands

Filed Jan. 19, 1979, Ser. No. 4,839

Claims priority, application Netherlands, Feb. 7, 1978, 7801373

Int. Cl.³ F04B *49/02*

U.S. Cl. 417—283 **1 Claim**



1. In a positive displacement pump having a rotor in a housing having opposed side walls and a peripheral wall and wherein one side wall of said housing is resiliently urged against a side of said rotor by resilient means, said housing having an inlet region and an outlet region defined in part by said one side wall, the improvement comprising:

a passageway having an inlet end communicating with the interface between said rotor and said one side wall whereby when pressure in said outlet region exceeds an amount determined by said resilient means and moves said one side wall away from said rotor, fluid from said outlet region will flow to said passageway, said rotor being a gear rotor; an outer gear member surrounding said gear rotor and meshing therewith; the peripheral wall of said housing comprising a ring having an inner peripheral face surrounding said outer gear member, said one side wall being axially movable relative to said ring; said passageway comprising a channel extending axially across the inner face of said ring and communicating with passage means leading to the exterior of said housing.

4,253,804

DOUBLE ACTION HAND PUMP STRUCTURE

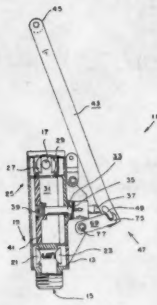
John A. Vanderjagt, 1395 Glen Oaks, Memphis, Tenn. 38117

Filed Apr. 25, 1979, Ser. No. 33,198

Int. Cl.³ G05G *1/20*; F04B *39/00*

U.S. Cl. 417—534 **4 Claims**

1. The combination with a liquid transfer hand operated pump of the double acting type having a housing provided with inlet and outlet ports, inlet and outlet check valve means respectively disposed within said housing adjacent said inlet and outlet ports, said housing defining an inner chamber interposed between said inlet and outlet check valve means, a reciprocatable rod extending through an aperture provided in said housing and having an outer end disposed on the exterior thereof and an inner end reaching into said inner chamber, means attached to said inner end of said reciprocatable rod for alternately varying the effective volume of said chamber as said reciprocatable rod is caused to reciprocate so as to cause the liquid within said chamber to be forced outwardly from said outlet port, and lever means adapted to be manually grasped when operating said pump; linkage means for coupling said lever means to (1) said housing, and (2) to said outer end of said reciprocatable rod; said linkage means comprising pin means about which said outer end of said reciprocatable rod means is free to pivot and including means for precluding relative pivotal movement between said lever means and said pin means, although said pin means is freely received in aligned rod apertures provided in said outer end of said reciprocatable rod and said lever means; said pin means including first and second parallel spaced apart pin members rigidly fixed one with the other, said first pin member being freely received



through the rod apertures provided in said lever means and said reciprocatable rod, thus said rod being pivotally attached to said lever means, and said linkage means including at least one elongated plate-like link member having distal and proximal ends thereto with said distal end thereof being pivotally attached to said housing, said proximal end of said elongated plate-like link member being provided with a link aperture for pivotally receiving said second pin member of said pin means, said lever means also being provided with a link aperture for receiving said second pin member of said pin means, thus either end of said elongated plate-like link member is free to pivot while relative pivotal movement between said lever means and said pin means remains absolutely impossible, although said first pin member of said pin means is freely received in said rod apertures of said lever means and said reciprocatable rod and said second pin member of said pin means is freely received in said link apertures of said lever means and said link member.

4,253,805

ROTARY COMPRESSOR

Johannes Steinwart, Obersulm-Willsbach, and Max Ruf, Neckarsulm-Obereisesheim, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 24,093

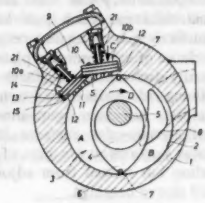
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815548

Int. Cl.³ F04C *2/00*

U.S. Cl. 418—54 **6 Claims**

1. A rotary compressor, comprising a housing with a curved rotor chamber, a rotor which defines, with the rotor chamber, variable working volumes, an outlet port located in the rotor chamber over which the rotor rides, an outlet passage communicating with the outlet port, a pair of outlet valves located in the outlet passage, and each comprising a valve plate, a limit plate which limits the distance of lift of the valve plate, and a valve seat, the valve plate, limit plate and valve seat defining apertures, the apertures in the valve seat being staggered in

relation to those in the valve plate, and in which the outlet port defines a number of passages which are divided into two groups, spaced in the direction of rotation of the rotor, each group being controlled by a separate outlet valve, and two



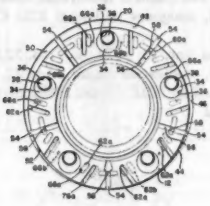
support surfaces for the two outlet valves, into which the bores open, located in the outlet passage close to the rotor chamber, the two support surfaces being inclined to each other and the planes of these surfaces intersect, as seen in cross section, at the apex of the included angle.

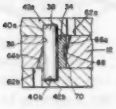
4,253,806

LOW SPEED HYDRAULIC MOTOR WITH COUNTER BALANCED PLANETATING DRIVE RING AND SPRING BIASED VANES

Michael A. D'Amato, Orrville, Ohio, assignor to Flo-Tork Inc., Orrville, Ohio

Filed Apr. 13, 1979, Ser. No. 29,852
Int. Cl.³ F03C 2/00
U.S. Cl. 418—61 R **7 Claims**





1. In a hydraulic motor having a pair of service ports adapted to be connected respectively to high-pressure supply and low-pressure return motive fluid conduits,

a planetating drive ring sandwiched between a pair pair of port plates,

a gear driven by said drive ring,

a plurality of bearing means extending between the port plates and disposed at angularly spaced intervals about said drive ring for constraining the same with respect to the port plates against other than planetating movement about an axis in one orbital direction or the opposite,

a fluid chamber wall of closed configuration opposite a periphery of said drive ring,

a plurality of vanes angularly spaced about the drive ring periphery and defining between the drive ring and the chamber wall a plurality of expansible-contractile working chambers angularly spaced about the drive ring periphery,

and motive fluid control means responsive to the orbital positioning of said drive ring for connecting said working chambers, at least one at a time, in sequence in one circumferential direction or the other to one of said service ports while connecting to the other service port generally oppositely disposed working chambers sequentially in the same direction, whereby motive fluid forces which energize the working chambers impose peak loads sequentially to those sides of the bearing means which are disposed contra to the circumferential direction in which the working chambers are energized,

the improvement which comprises means responsive to the orbital positioning of the drive ring for sequentially applying hydrostatic balancing forces to those bearing means which are disposed substantially 180° from the energized working chambers in opposition to the peak loads imposed thereon.

4. A hydraulic drive motor having a planetating drive ring sandwiched between two plates, eccentric bearing means mounting said drive ring on said plates for orbital movement about an axis, and a fluid chamber wall surrounding the drive ring, said drive ring having a plurality of angularly sapced vane slots extending from side to side therethrough,

a plurality of vanes having inner ends slidably mounted in said vane slots and having free ends slidably engaging against portions of chamber wall,

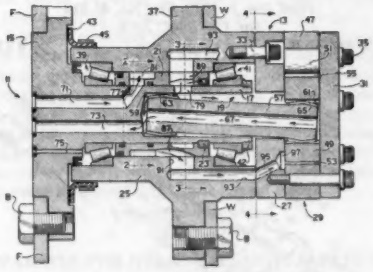
and means for maintaining the outer ends of the vanes engaged against said portion of the chamber wall comprising for each slot an elongate spring extending therethrough in the axial direction of the drive ring, each spring having an intermediate portion engaging against the inner end of the vane in said slot and outer ends engaged in grooves in said port plates which constrain said spring against movement other than along a path parallel to the portion of said chamber engaged by the vane.

4,253,807

FLUID PRESSURE OPERATED WHEEL DRIVE

James H. Pahl, Wayzata, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 853,374, Nov. 21, 1977, Pat. No. 4,171,938. This application Jul. 25, 1979, Ser. No. 60,269
Int. Cl.³ F03C 2/22; B60K 7/00
U.S. Cl. 418—61 B **11 Claims**



1. A rotary fluid pressure device comprising:

(a) stationary housing means adapted to be rigidly fixed to a vehicle, said stationary housing means including an axially-oriented elongated portion defining an axially-extending opening;

(b) rotatable housing means adapted to be connected to a vehicle wheel, said rotatable housing means being disposed in generally surrounding relationship to said elongated portion;

(c) said rotatable housing means having an internal gear set associated therewith, said internal gear set including an internally-toothed member and an externally-toothed member eccentrically disposed within said internally-

toothed member for relative movement therebetween, the teeth of said members interengaging to define expanding and contracting volume chambers during said relative movement;

(d) a shaft member disposed partially within said axially-extending opening and having a first end portion cooperating with said elongated portion to define a first connection means and a second end portion cooperating with said externally-toothed member to define a second connection means, to substantially prevent relative rotation between said stationary housing means and said externally-toothed member, said shaft member defining a generally axial bore extending from said first end portion to said second end portion and providing fluid communication therebetween;

(e) said stationary housing means defining first and second fluid ports, one of said fluid ports communicating with said axially-extending opening, at a first location axially adjacent said first end portion of said shaft member, said elongated portion of said stationary housing means defining a fluid opening communicating with said axially-extending opening, at a second location intermediate said first and second connection means;

(f) said stationary housing means and said rotatable housing means cooperating to define first fluid passage means providing fluid communication between said first fluid port and one of said expanding and contracting volume chambers, and second fluid passage means providing fluid communication between the other of said expanding and contracting volume chambers and said second fluid port; and

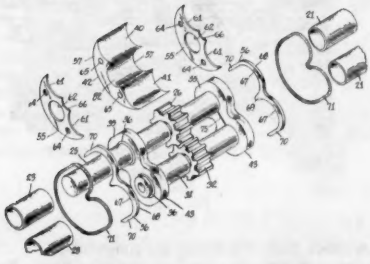
(g) system fluid flowing between one of said first location and said second location and the other of said first location and said second location, a first portion of system fluid flowing through said first connection means, and a second portion of system fluid flowing through said axial bore and said second connection means and recombining with said first portion, and flowing through the other of said first and second locations, said first and second portions comprising substantially all of said system fluid.

4,253,808

HYDRAULIC PUMPS

Ira G. White, Canal Fulton, Ohio, assignor to Hunt Valve Co., Inc., Salem, Ohio

Filed Jun. 5, 1979, Ser. No. 45,614
Int. Cl.³ F04C *2/08*
U.S. Cl. 418—126 **8 Claims**



1. A gear pump for pumping hydraulic fluid, particulary water hydraulic fluids, comprising:

a pump housing having a chamber and a pair of meshing gears within said chamber, said housing having inlet and outlet ports communicating with said chamber at respective low- and high-pressure sides of the intermesh of said gears, said chamber having opposed circular portions corresponding to the outside circle of the teeth of respective gears, and said chamber having a semicircular portion at the low-pressure side of said gears,

each of said gears having shaft portions extending from opposite sides thereof and journalled in respective sleeve bearings which are carried by said housing,

a pair of flat-pressure plates, each having an inwardly-directed surface bearing against a respective side of said gears and each having openings to pass said shaft portions,

two pairs of complementary flat first- and second-spacer plates of equal thickness, each pair having inwardly-directed flat surfaces bearing against respective outwardly-directed surfaces of said pressure plates and each pair having outwardly-directed flat surfaces bearing against respective defining side walls of said housing chamber,

each first-spacer plate having a figure-three configuration with a pair of arcuate-edge surfaces fitting respective chamber circular portions and a pair of inner-edge surfaces surrounding but spaced from adjoining peripheral portions of said sleeve bearings,

each second-spacer plate being of quarter-moon shape and disposed at the low-pressure side of said gears, each having an outer semicircular edge spaced from the semicircle portion of said housing chamber, a pair of arcuate inner edges fitting about respective sleeve bearings and a small arcuate recess intermediate thereof, and

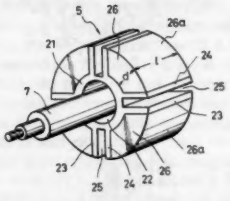
a seal squeezed between the outwardly-directed surfaces of said pressure plates and respective defining side walls of said housing chamber, said seal fitting around the semicircular portion of each second-spacer plate and within the inner edge portions of said first-spacer plate.

4,253,809

VANE COMPRESSOR WITH ROTOR HAVING METALLIC BASE AND VANE SLOTS AND A PERIPHERY OF LOWER SPECIFIC GRAVITY

Yutaka Ishizuka, and Shinichi Kobayashi, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,517
Claims priority, application Japan, May 22, 1978, 53-68933
Int. Cl.³ F01C *21/08*; F04C *29/00*
U.S. Cl. 418—152 **12 Claims**



1. A rotor for use in a pump section of a vane compressor, comprising:

a boss element having a central axial bore into which a rotary shaft is force fitted;

at least two pairs of lateral plates formed on a peripheral lateral surface of said boss element at circumferentially equal intervals and outwardly projecting therefrom, said lateral plates being integrally formed with said boss element, the lateral plates of each pair being spaced from each other to define a slit therebetween for receiving one of said vanes therein;

said boss element and said lateral plates extending throughout the substantially entire axial length of said rotor; and

a plurality of peripheral elements, each having an arcuate outer peripheral surface, said peripheral elements each being provided between opposed ones of the lateral plates of adjacent pairs, said peripheral elements each having an inner peripheral surface and opposite side surfaces disposed in contact with said peripheral lateral surface of said boss element and said opposed ones of the lateral plates of adjacent pairs, respectively;

said boss elements and said lateral plates being made of a metal having a sufficient mechanical strength;

said peripheral elements being made of a lubricious material which has a smaller specific gravity than that of said metal from which said boss elements and lateral plates are made, said material from which said peripheral elements are made also having a coefficient of friction small enough to keep sliding contact faces of parts facing said rotor in the pump housing from undergoing substantial abrasion; and

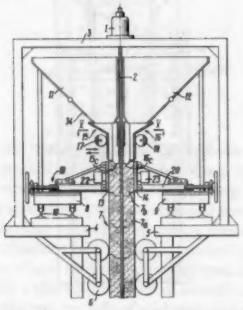
said peripheral elements each having opposite end faces slightly projecting axially outwardly from the associated end faces of said boss element and having said arcuate outer peripheral surface thereof slightly projecting radially outwardly from radially outer surfaces of said lateral plates.

4,253,810

CONCRETE PLACING APPARATUS FOR CASTING SOLID WALLS

Tigran V. Bezhanov, ulitsa Galaktiona Tabidze, 3/5, kv. 4; Edisher G. Rcheulishvili, ulitsa Titsiana Tabidze, 39, both of Tbilisi; Vladimir A. Bezhanov, ulitsa Papanina, 56, kv. 37, Baku, and Anatoly T. Kvekveskiri, 1 Bzybsky proezd, 28, Sukhumi, all of U.S.S.R.

Filed Jan. 21, 1980, Ser. No. 113,494
Int. Cl.³ E04G *11/22*; B28B *21/16*
U.S. Cl. 425—64 **11 Claims**



1. A concrete placing apparatus for casting solid walls, comprising:

jacks arranged in line along a wall being cast;

U-shaped frames suspended on said jacks;

scaffolds connecting said frames and arranged on both sides and along the line of arrangement of said jacks;

driving carriages mounted on said scaffolds for movement therealong;

a feed hopper, a moulding board and a device for compacting concrete, all the three mounted on each said carriage:

at least one of said moulding boards comprising:

a drive for transversely moving said moulding board relative to the line of arrangement of said jacks so as to vary a distance between said moulding boards;

a rod connecting said moulding board to said drive;

said device for compacting concrete being made in the form of a vibrating chute disposed under said feed hopper and above said moulding board, and provided with a vibrating means for oscillating along the direction of movement of said moulding board;

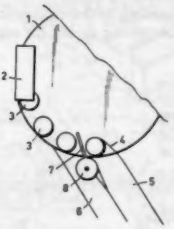
one of said vibrating chutes which is disposed on the same carriage with said moulding board having a drive, consists of two parts attached to each other so as to be capable of extending in the direction of movement of said moulding board, one of these parts being connected with said drive of said moulding board for varying a passage area of said vibrating chute depending on the distance between said moulding board and the line of arrangement of said jacks.

4,253,811

METHOD OF AND A DEVICE FOR SORTING PELLETS UPON THEIR MOLDING IN A PREFORMING PRESS

Jürgen Hinzpeter; Ingo Schmidt, both of Schwarzenbek, and Konrad Friedrichs, Sinzig, all of Fed. Rep. of Germany, assignors to Firma Wilhelm Fette GmbH, Schwarzenbeck, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 43,303
Int. Cl.³ B30B *11/00*
U.S. Cl. 425—149 **5 Claims**



1. In a preforming press having a rotary die disk, a punching station having punching means cooperating with said disk to mold pellets in said die disk within a predetermined range of compressing forces, and a device for sorting the completed pellets, said sorting device comprising means for measuring the compressing force exerted by said punching means during the molding process; pellet ejecting means arranged in the range of said disk downstream of said punching station, said pellet ejecting means including a solenoid and a guide partition operatively connected thereto; an electronic measuring circuit for evaluating the applied compressing force to measure the quality of the resulting pellet; a first proximity switch cooperating with said punching means for activating said measuring circuit at the moment of maximum compressing force; and an electronic control circuit for actuating said ejecting means, said control circuit including a time-setting circuit cooperating with said measuring circuit, a second proximity switch cooperating with said punching means to generate a signal the duration of which is a function of the speed of travel of said punching means and of the rotational speed of said die disk, said signal being applied to said time-setting circuit to determine the beginning of the activation of said control circuit in response to the speed of said die disk, said solenoid being activated by said time-setting circuit to thereby move said guide partition between a lower pellet ejecting position and an upper pellet passing position in response to said signal.

4,253,812

APPARATUS FOR HEADING PLASTIC SAFETY PINS FOR INFLATION MANIFOLDS

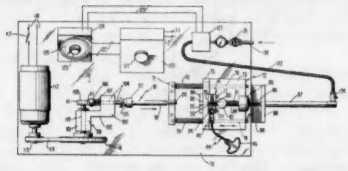
Glenn H. Mackal, Buena Vista Dr., Ringwood, N.J. 07456, and Edward A. Judd, 253 Fulton St., New Milford, N.J. 07646

Division of Ser. No. 764,598, Feb. 1, 1977, Pat. No. 4,126,182, which is a continuation of Ser. No. 558,244, Nov. 14, 1975, abandoned. This application Jan. 7, 1980, Ser. No. 110,104
Int. Cl.³ B29C *3/06*
U.S. Cl. 425—157 **11 Claims**

1. An apparatus for heading a thermoplastic pin inserted in a passage in a body, comprising means for supporting the body with the pin inserted in a passage in a body, comprising means for heating a pin heading die above the melting point of the pin, means mounting the die axially of the pin and confronting the first end of the pin, and means for reciprocating the heading die in the body and the pin inserted therein relatively toward and

away from each other at a frequency of from 3 to 20 times a second so that the die alternately engages the first end of the pin and is withdrawn from engagement therewith, whereby the first end of the pin is repeatedly partially melted and compressed so that the head is progressively formed on said first end of the pin, the partially deformed portion of the pin cooling momentarily when the die is withdrawn from engagement therewith, the means for supporting the body being a carriage having a body supporting means thereon, and comprising means for continuously reciprocating the die between the retracted position and an extended position, and means for thrusting the carriage toward the die so that the first end of the pin is engaged by the die when the latter is in its extended position but is out of engagement with the die when the latter is in its retracted position.

2. Apparatus for heading a thermoplastic pin inserted in a passage in a body, comprising means for supporting the body



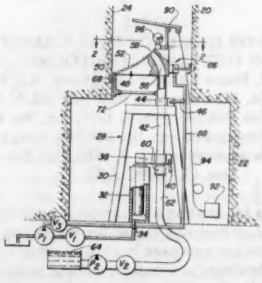
with the pin inserted therein with a first, unheaded end of the pin protruding from a first side of the body, a pin heading die mounted axially of the pin and confronting the first end of the pin, means for rapidly reciprocating the heading die and the body and the pin inserted therein relatively toward and away from each other so that the die alternately engages the first end of the pin and is withdrawn from engagement therewith, means for heating the heading die above the melting point of the pin, the heated heading die heating and partially melting and compressing the first end of the pin when the heated die is advanced into engagement with the pin so that a head is progressively formed on the first end of the pin during successive engagements between the die and the pin formed on the first end of the pin, the periodic withdrawal of the heated die from engagement with the pin permitting the partially deformed portion of the pin to cool momentarily when the die is withdrawn from engagement therewith.

4,253,813

APPARATUS FOR APPLYING A FLOWABLE COATING MATERIAL TO THE INTERIOR OF A STACK

Eugene C. Farrell, Jr., 434 70th Ave., Box 677 E., East Moline, Ill. 61265

Filed Oct. 9, 1979, Ser. No. 83,148
Int. Cl.[3] B29C *23/00*; B28B *1/30*
U.S. Cl. 425—90 **15 Claims**



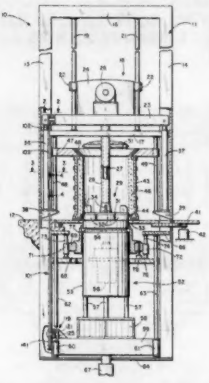
1. Apparatus for applying a flowable coating material to a limited sector only of an interior wall of a tubular stack such as a chimney, flue and the like in a single pass, comprising: a distributor disposed at a starting point in the stack, said distributor having an upper surface sloping downwardly and laterally toward only the wall sector to be coated; coating material supply means; means for conducting coating material from said supply means to the upper surface of the distributor for flowing to said wall sector; means for advancing the distributor in the stack while the coating material is supplied to said upper surface for coating the wall sector continuously during advance of the distributor; gage means for causing the distributor to follow the wall sector as it advances; means for discontinuing supply of material to the distributor; and means for causing return of the distributor to its starting point.

4,253,814

PACKERHEAD AND CORE CONTROL SYSTEM

Alfred W. Christian, Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

Filed Jan. 29, 1979, Ser. No. 7,296
Int. Cl.[3] B29D *23/08*; B29C *3/06*
U.S. Cl. 425—150 **36 Claims**



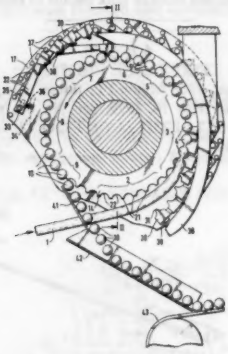
1. A machine for making concrete pipe comprising: an upwardly extended frame, a cross head having a motor and gear box, first guide means mounted on the frame supporting the cross head for movement in a vertical direction, a packerhead connected to the gear box whereby on operation of the motor the packerhead is rotated, first hydraulic cylinder means connected to the cross head to move the cross head in said vertical direction, a turntable for supporting an upright mold in vertical alignment with the packerhead, said turntable being movable to locate the mold in an off-bearing station, an upright cylindrical core located below the turntable in axial alignment with the packerhead, vibrator means mounted on the core for vibrating the core, a support connected to the core, second guide means mounting the support for movement in a vertical direction, second hydraulic cylinder means connected to the support to move the support and core in the vertical direction, means for supplying hydraulic fluid under pressure to the first and second hydraulic cylinder means to move the packerhead and core upwardly into the mold and retract the core from the mold, means for supplying concrete to the mold during the time the packerhead moves upwardly into the mold whereby the packerhead forms a concrete pipe in the mold, control means operatively connected to the first and second hydraulic cylinder means for controlling the movement of the packerhead and core relative to each other whereby the core is maintained in closed spaced relationship below the packerhead during movement of the packerhead and core in an upward direction and during movement of the packerhead and core in a downward direction.

4,253,815

METHOD AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF CANDIES FROM A STRAND OF CONFECTION

Hans Beckers; Paul-Werner Jung, both of Monchen-Gladbach; Herbert Bovians, Viersen, all of Fed. Rep. of Germany; Hans Heyer, deceased, late of Viersen, Fed. Rep. of Germany (by Adele Heyer, Hans P. Heyer, heirs), and by Marlene Wanders, heir, Beuggen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 837,338, Sep. 28, 1977, Pat. No. 4,183,968.
This application May 30, 1979, Ser. No. 43,777
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643855
Int. Cl.[3] A23G *1/20*
U.S. Cl. 425—235 6 Claims



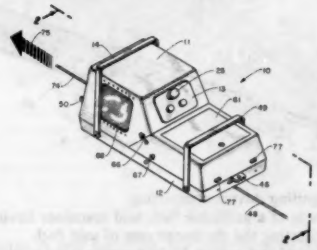
1. A device for forming candy blanks from a cylindrical confectionary strand having a liquid filling comprising, in combination, a rotating stamping chamber ring with laterally open, one-piece stamping chambers arranged parallel to its axis of rotation, a plurality of pairs of stamping dies rotatable with said stamping chamber, each pair of stamping dies axially aligned with one of said stamping chambers and arranged to be moved thereinto, a plurality of pairs of separating teeth rotatably disposed adjacent one side of said stamping chamber ring, each of said pairs of said separating teeth being disposed for reciprocal radial movement between a disengaged open position and an engaged operative position in axial alignment with an associated stamping chamber to form a blanking chamber for severing separate candy blanks having seamed zones from the confectionary strand, one of said separating teeth in each of said pairs of separating teeth is pivotably mounted upon an axis parallel to the axis of rotation of said stamping chamber ring and the rotation of the pairs of separating teeth, a pair of stationary cams each associated with all of the corresponding stamping dies in said plurality of pairs of stamping dies for moving each of said pairs of stamping dies toward each other against opposite sides of a candy blank in said blanking chamber to compress the flat seams of said blank and preform said blank, said stationary cams being adapted to permit movement of each of said pairs of stamping dies in the same direction into the associated stamping chamber with said candy blank retained therebetween to form-fittedly tighten said blank, said pair of stationary cams also adapted to move said pairs of stamping dies closer together with said candy blank retained therebetween in said associated stamping chamber to form a finished candy blank free of flash overflow, said pair of stationary cams being further adapted to permit movement of said pairs of stamping dies apart with said finished candy blank disposed in said associated stamping chamber and means for ejecting said finished candy blank from said associated stamping chamber.

4,253,816

POWERED JOINT FORMING DEVICE FOR CONCRETE OR THE LIKE

Luther Tobias, 4012 Lower Wyandotte Dr., Oroville, Calif. 95965, and David G. Bories, 8421 Ascolano Ave., Fair Oaks, Calif. 95628

Filed Aug. 13, 1979, Ser. No. 65,770
Int. Cl.[3] B28B *1/04, 1/08;* B29C *23/00*
U.S. Cl. 425—385 10 Claims



1. A motor driven jointer for forming a groove in wet concrete slab comprising:

a housing;

a motor contained within said housing;

stress joint preforming means for preforming a stress joint in a wet concrete slab on the underside of said housing adjacent the forward edge thereof; and

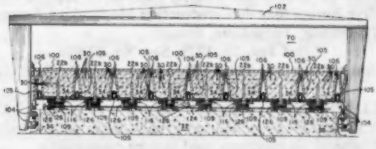
reciprocating tamper foot means actuated by said motor reciprocating in an opening in the underside of said housing rearwardly of said stress joint preforming means for forming a stress joint in wet concrete slab.

4,253,817

CONCRETE RAILROAD TIE CASTING AND HANDLING SYSTEM

Frederick M. Stinton, Woodbridge, Canada, and William C. Weikert, Fort Worth, Tex., assignors to Martin Concrete Engineering Company, Fort Worth, Tex.

Filed Jul. 27, 1978, Ser. No. 928,697
Int. Cl.[3] B28B *1/08, 13/02*
U.S. Cl. 425—447 2 Claims



1. A system for slip-forming concrete crossties, comprising:

an elongated casting bed,

a plurality of molds arranged side by side and end to end on the casting bed, each mold having a casting plate supported above the casting bed by a frame,

a continuous casting machine movable along the bed while the molds remain stationary, the machine having means for forming a casting chamber above each casting plate, said means making a slidable fluid seal at points of sliding engagement of the casting chamber means with each casting plate as the machine moves along the bed.

4,253,818

IGNITING DEVICE

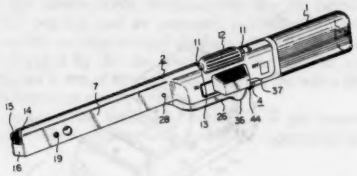
Syunji Ogawa, Tokyo, and Seiichi Kitabayashi, Ageo, both of Japan, assignors to Nippon Gas Co., Ltd., Japan

Filed Dec. 4, 1978, Ser. No. 966,005

Claims priority, application Japan, Dec. 14, 1977, 52-150096; Mar. 20, 1978, 53-32173

Int. Cl.³ F23Q *2/00*

U.S. Cl. 431—142 **8 Claims**



1. An igniting device comprising

a container of a gasifiable fuel, said container having means for adjusting the discharge rate of said fuel,

an elongated and hollow body member fixed at one longitudinal end to said fuel container,

an igniting means comprising a rotary member rotatably supported adjacent said fixed end of said body member and having an axial shaft extended from an end inside the body member to the other end thereof and a spark generating means disposed at said other end of the body member and operatively coupled to said extended end of said shaft,

means operatively engaging said adjusting means of the fuel container for opening and closing the adjusting means,

means for feeding said fuel from the fuel container to the vicinity of said spark generating means,

means for locking said opening and closing means for said fuel discharge rate adjusting means to a non-operative state, said locking means including a button mounted on said body member for slidable movement between locking and releasing positions,

said opening and closing means including an actuating member pivoted at one end thereof on said body member and shiftable at another end thereof between non-actuating and actuating position, and

said slidable button being engaged with said other end of said actuating member when the button is slid to said locking position for locking the actuating member in said non-actuating position.

4,253,819

SYSTEM FOR THE COMBUSTION OF LIQUID FUEL, NOTABLY OF THE MINERAL-OIL TYPE

Robert Joret, Angouleme, France, assignor to S.E.C.O.M.A.T., Societe Europeenne de Construction Mechanique Automobile et Thermique, Angouleme, France

Filed Jun. 26, 1979, Ser. No. 52,919

Claims priority, application France, Jul. 13, 1978, 78 21066

Int. Cl.³ F23D *11/44*

U.S. Cl. 431—208 **7 Claims**

1. A system for combustion of liquid fuels, particularly low grade mineral oil products, said system comprising:

first storage tank means for storing therein a supply of liquid fuel;

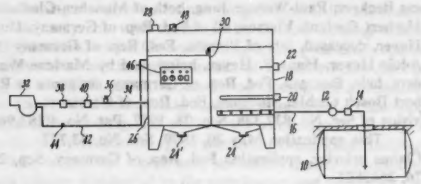
first transfer means for discharging said liquid fuel from said first storage tank means;

decantation tank means for receiving the thus discharged liquid fuel from said first transfer means and for decanting waste particles from said liquid fuel;

second storage tank means for receiving and storing therein the thus decanted liquid fuel from said decantation tank means;

overflow means, connecting said decantation tank means with said second storage tank means, for transferring said decanted liquid fuel from said decantation tank means to said second storage tank means;

burner means for burning said decanted liquid fuel; and



second transfer means for supplying said decanted liquid fuel from said second storage tank means to said burner means.

4,253,820

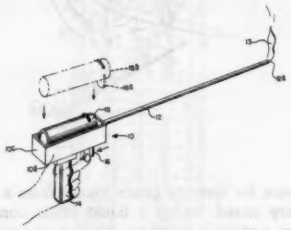
FIREPLACE LIGHTER

Donald J. Jarreau, 7350 Memo Pl., Baton Rouge, La. 70816

Filed May 10, 1979, Ser. No. 37,765

Int. Cl.³ F23D *13/04*; F23Q *13/04*

U.S. Cl. 431—344 **10 Claims**



1. A fireplace lighter comprising:

a. chamber means adapted for receiving disposable lighter means;

b. handle means connected to said chamber means for grasping by the user;

c. an elongated hollow tube connected to said chamber means for receiving the conveying flammable gas from said disposable lighter means; and,

d. slidable trigger means connected to said chamber means for releasing flammable gas from said disposable lighter.

4,253,821

METHOD AND DUCTING SYSTEM FOR HOT GAS HEAT RECOVERY

Norman F. Bradshaw, Surrey, England, assignor to Schweitzer Industrial Corporation, Madison Heights, Mich.

Continuation-in-part of Ser. No. 929,362, Jul. 31, 1978, abandoned. This application Dec. 21, 1978, Ser. No. 971,851

Int. Cl.³ F24D *23/02*; F26B *19/00*

U.S. Cl. 432—2 **14 Claims**

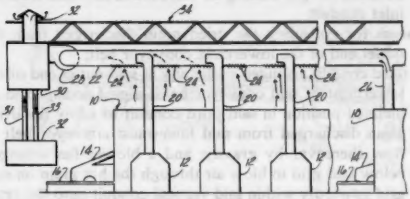
1. In combination, a heat recovery system and a paint curing oven of the type including a plurality of fuel-fired heaters, each having an exhaust vent stack directly receiving the exhaust gases from a respective one of said fuel-fired heaters, said system recovering heat from said plurality of paint curing oven fuel-fired heaters and including:

a collector duct extending over each of said paint curing oven heaters;

means for drawing air flow at cooler temperatures through said collector duct;

means for introducing the exhaust gas from each of said paint curing oven fuel-fired heaters into the interior of said

collector duct, including ducting means directing the flow from each of said exhaust vent stacks into the interior of said collector duct;



means for extracting heat from said mixture of air and exhaust gas circulated through said collector duct.

4,253,822

DRYING WOOD PULP

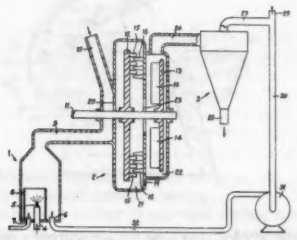
Geoffrey D. Marsh, Coventry, England, assignor to Courtaulds Limited, London, England

Filed Sep. 28, 1978, Ser. No. 946,728

Claims priority, application United Kingdom, Oct. 6, 1977, 41596/77

Int. Cl.³ F27B *5/00*; F26B *7/00*

U.S. Cl. 432—14 **4 Claims**



1. In a process for drying wood pulp comprising

(i) heating air in a burner to a temperature of 300° C. to 600° C. by burning a fuel in the air

(ii) contacting the heated air with the wood pulp and subjecting the air and pulp to turbulence in a dryer comprising relatively rotating members which intermesh on rotation so that the dried wood pulp fibres are suspended in the air issuing from the dryer and

(iii) separating the dried wood pulp fibres from the air, the improvement comprising recycling 55 to 75 percent by volume of the air thus separated to the burner so that the air admitted to the burner comprises 14 to 25 percent by volume fresh air and 75 to 86 percent by volume recycled air, the proportions of fresh air and recycled air being such that the heated air contacting the pulp has an oxygen content of less than 10 percent by volume and a moisture content of more than 30 percent by volume.

4,253,823

PROCEDURE AND APPARATUS FOR BAKING CARBON BODIES

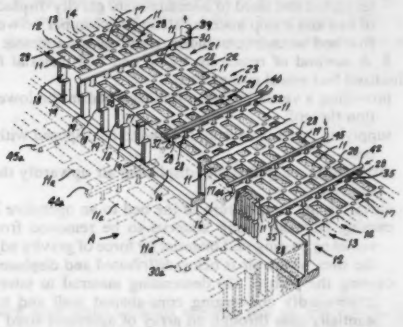
Donald N. Holdner, Falardeau, Canada, assignor to Alcan Research & Development Limited, Montreal, Canada

Filed May 17, 1979, Ser. No. 39,751

Int. Cl.³ F26B *9/12*; F27D *15/02*; F27B *7/00*

U.S. Cl. 432—18 **17 Claims**

16. In a furnace for baking carbon bodies which has a series of enclosing structures adapted to hold such bodies, at least one said structure having heating means for baking carbon bodies held therein and a plurality of other such structures being arranged in a sequence to hold baked bodies for cooling, and flue means abutting said structures and connected in series for conducting cooling gas past and in heat exchange relation to



the structures of said sequence, the improvement comprising means for spraying water into said flue means abutting one of said cooling structures whereby the cooling gas as it passes said structures of the sequence carries water droplets or vapor.

4,253,824

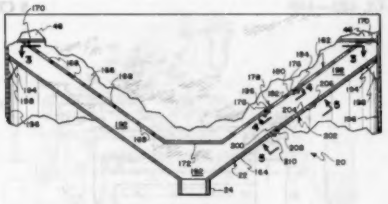
TRAMP REMOVAL AND BED RECIRCULATION SYSTEM

Jerry B. Foote, Spokane, Wash., assignor to Energy Products of Idaho, Coeur d'Alene, Id.

Filed Jul. 13, 1979, Ser. No. 57,479

Int. Cl.³ F27B *15/00*

U.S. Cl. 432—58 **5 Claims**



1. A system for removing tramp and bed material from a fluidized bed vessel comprising:

a vessel having a fluidized bed in the lower portion thereof;

means supplying fuel and causing the fuel to be disposed within the bed;

means for distributing air within and displacing air upwardly through the bed;

means by which the temperature of the bed is elevated to an operative level;

the improvement comprising a bed and tramp material removal apparatus disposed below the air distributing and displacing means comprising first and second vertically spaced cone means defining a hollow generally conically shaped chamber therebetween;

the first cone means comprising a downwardly converging cone-shaped wall which supports a substantial part of the weight of the bed in the vessel, the cone-shaped wall comprising an array of apertures sized to pass under force of gravity both bed and tramp material from the vessel into the chamber;

the second cone means being disposed below the first cone means and the chamber and comprising a downwardly converging substantially uninterrupted cone-shaped wall

and effluent conduit means at the low point of the wall in communication with the chamber by which the bed and tramp material is removed under force of gravity from the vessel;

the cone-shaped chamber being hollow, substantially uninterrupted and sized to accommodate gravity displacement of bed and tramp material along the chamber between the first and second cone means to the conduit means.

5. A method of removing tramp and bed material from a fluidized bed vessel comprising:

providing a vessel having a fluidized bed in the lower portion thereof;

supplying fuel and causing the fuel to be disposed within the bed;

distributing air within and displacing air upwardly through the bed;

elevating the temperature of the bed to an operative level;

causing bed and tramp material to be removed from the vessel by passing said material by force of gravity adjacent the sites where air is being distributed and displaced;

causing the path of the descending material to intersect a downwardly converging cone-shaped wall and to substantially pass through an array of apertures sized to accommodate passage of the bed and tramp material;

causing the passed material to engage a downwardly converging solid cone-shaped wall;

accommodating hour-glass gravity displacement of engaged bed and tramp material along a hollow chamber between the two cone-shaped walls and discharge of the material from an opening at the low point of the solid cone-shaped wall.

4,253,825

GRAIN DRIER

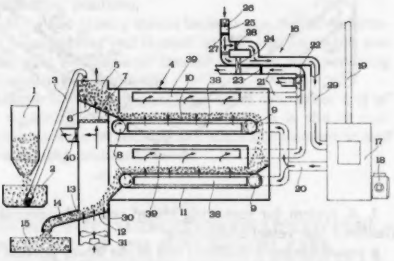
Pietro Fasano, Strada San Martino 30/C, Cantalupa (To), Italy

Filed Apr. 30, 1979, Ser. No. 34,614

Claims priority, application Italy, Dec. 12, 1978, 69831 A/78

Int. Cl.³ F27B 9/00

U.S. Cl. 432—149 **5 Claims**



1. A grain drier comprising

a housing;

a plurality of conveyor belts arranged horizontally in said housing one above another in sufficiently staggered endwise relationship so that grain conveyed to the end of the uppermost conveyor belt will drop onto the next lower conveyor belt and will descend in similar manner to the lowermost conveyor belt; means for delivering grain from a storage container to an inlet end of said uppermost conveyor belt;

means for generating hot air;

means for conducting said hot air from said generating means to a position below each of said conveyor belts and for distributin such hot air along and across said conveyor belts and upwardly through the grain thereon;

means for collecting, extracting and discharging the still hot but now moist air from a position above and along the upper surface of each of said conveyor belts;

means for recovering from said hot moist air heat used for drying the grain, including a conduit connected to said most air collecting, extracting and discharging means, a fresh air inlet conduit leading to said hot air generating means and a heat exchanger arranged across these two conduits for pre-heating air introduced into said fresh air inlet conduit;

means for collecting the dried grain discharged from the outlet end of the lowermost conveyor belt;

a third conduit arranged vertic ally at said outlet end of the lowermost of said conveyor belts, a grid arranged in an inclined position in said third conduit to allow the dried grain discharged from said lowermost conveyor belt to flow thereover by gravity; and a blower fan arranged below said grid to blow air through the hot grain on said grid upwardly within said vertical conduit onto the grain entering said inlet end of the uppermost of said conveyor belts.

4,253,826

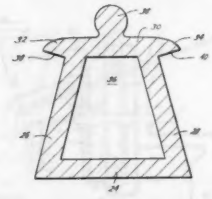
TRUNCATED TRIANGULAR SKID PIPE

Frank Campbell, Jr., 2274 Broadlawn, Houston, Tex. 77058

Filed Sep. 10, 1979, Ser. No. 74,195

Int. Cl.³ F27D 3/02

U.S. Cl. 432—234 **14 Claims**



1. A water cooled skid pipe for supporting a metal shape in a high temperature environment comprising:

a. a base member having first and second ends;

b. first and second side members extending upwardly from the first and second ends respectively of the base member, said upwardly extending side members converging toward one another;

c. an apex member connecting the uppermost portions of the converging side members to form a substantially truncated triangular configuration;

d. first and second shoulders projecting outwardly from the uppermost portions of the first and second side members respectively and from the apex member;

e. a passageway through the skid pipe defined by the base member, first and second side members and the apex member, said passageway suitable for communicating a fluid therethrough; and

f. means to contact and support the metal shape.

4,253,827

REGISTRATION FIXTURE FOR SENSOR

Mark A. Brooks, Sterling Heights, and Robert E. Fallis, Milford, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

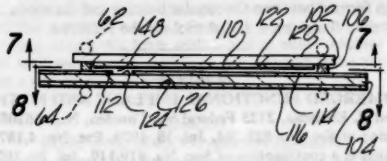
Filed Apr. 16, 1979, Ser. No. 30,581

Int. Cl.³ F27D 5/00; C21D 9/00

U.S. Cl. 432—253 **10 Claims**

5. A fixture to hold at least one pressure capsules, each pressure capsule having a first and a second plate, during the joining of each first and second plate together, comprising:

a plurality of holding member means, inter spacing each of said pressure capsules, for holding said at least one pressure capsule in separated, stacked and rotationally aligned engagement.

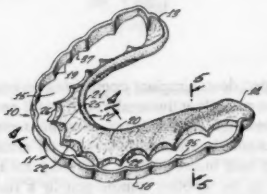


4,253,828

ORTHODONTIC APPLIANCE

Donna C. Coles, c/o Dens Company, 174 W. Live Oak, Arcadia, Calif. 91006, and Jerry P. Honstein, 6543 W. Circulo Dali, Anaheim Hills, Calif. 92807

Filed Apr. 9, 1979, Ser. No. 28,112
Int. Cl.³ A61C 7/00
U.S. Cl. 433—6 **27 Claims**



1. An orthodontic appliance comprising:
a generally U-shaped member, having
an outer portion having its principal surface substantially vertical, and contoured so as to be generally complementary to and adapted to engage portions of the facial surfaces of at least some of the teeth with such engagement being only intermediate the occlusal surfaces and the gingiva of a row of teeth, an inner portion spaced from said outer, portion, and
connecting portions interconnecting the ends of said inner and outer portions so that said member defines an opening dimensioned to receive all of the teeth of such a row of teeth so that the teeth extend through said opening with the occlusal areas exposed with said connecting portions extending around the distal surfaces of the posterior teeth of such a row of teeth,
said inner portion having a first surface contoured to be generally complementary to and adapted to engage portions of the lingual surfaces adjacent the gingiva and remote from the occlusal surfaces of at least some of the teeth of such a row of teeth, and a concave surface inwardly of said edge surface and adapted to generally complementarily engage the gingiva adjacent said lingual surfaces of said teeth, whereby said inner and outer portions cooperate to selectively move or retain said teeth.

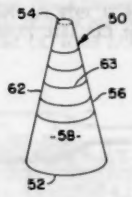
4,253,829

DENTAL DEVICE AND METHOD FOR REPLACING LOST TOOTH STRUCTURE

William H. Adelberger, 1375 Yellowstone Rd., Cleveland Heights, Ohio 44121

Filed Feb. 21, 1979, Ser. No. 13,239
Int. Cl.³ A61C 00/00
U.S. Cl. 433—40 **29 Claims**

1. A dental core form device for the preparation of a core for a crown on a prepared remaining tooth stub having extensive clinical crown loss, said device comprising a hollow conical blank having tapered continuous sidewall means severable substantially along any one of a plurality of planes substantially normal to the apical axis of said blank to produce a core form having an open gingival aspect with a transverse cross-sectional size and shape adapted to surround and to conform to



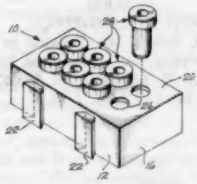
the tooth stub when installed thereon and an interior cavity adapted to receive a hardenable material and to shape such hardenable material to a desired final form, said tapered sidewall means being adapted to conform to the tooth stub and limit by a binding action the movement of the core form over the tooth stub to obtain proper seating of the core form on the tooth stub.

4,253,830

AUTOCLAVABLE DENTAL BUR BLOCK

Douglas H. Kazen, Kirkland, and Rudy F. Dengah, Seattle, both of Wash., assignors to North Pacific Dental, Inc., Kirkland, Wash.

Filed Jun. 8, 1979, Ser. No. 46,714
Int. Cl.³ A61G 1/14
U.S. Cl. 433—77 **6 Claims**



1. A portable holder for dental burs and the like of the type including an elongated substantially straight cylindrical shank and a rotary cutter formation on one end of the shank, said holder comprising a base portion adapted to rest on a horizontal support surface and maintaining therein a holder panel in substantially horizontal position elevated above said support surface, said holder panel having a plurality of mutually spaced receptacle holes therein, a plurality of substantially tubular insert elastomeric material receptacles retentively engaged in the respective panel holes with their tubular axis oriented substantially vertically, said insert receptacles each including a tubular body portion extending through said holder panel and open at top and bottom, and a head portion adapted to seat against the top face of the holder panel, thereby to locate the insert receptacle vertically in relation to the panel, said insert receptacle body portion having an axially extending tubular socket bore of a size and a surrounding bore wall of an elastic yieldability adapting the body portion to elastically expand to accommodatively receive and thereupon retentively grip and frictionally retain a dental bur shank inserted downwardly therein, at least certain of the insert receptacles have an upper portion extending about the holder panel with a tubular socket bore adapted to hold dental burs having shanks of a first order of size, and having a lower portion extending below the holder

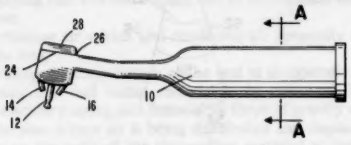
panel with a tubular socket bore adapted to hold dental burs with shanks of a smaller order of size.

4,253,831

ASPIRATING DENTAL DEVICE

Melvin H. Eaton, II, 2600 W. Landing Rd., Virginia Beach, Va. 23456

Filed May 29, 1979, Ser. No. 43,569
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—91 **12 Claims**



1. An aspirating dental device comprising:

an elongated sleeve member adapted to extend along an operative dental handpiece having a working end while being spaced therefrom, to define an air flow passage having an inlet adjacent the dental instrument working end and an outlet, said sleeve member being readily removable therefrom; and

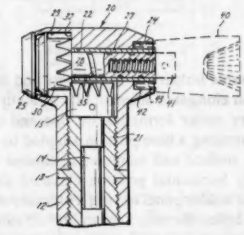
means connected to said air flow passage outlet and adapted for connection to a vacuum source for providing suction to said airflow passage to cause air to be removed therethrough from said inlet to said outlet whereby during use said sleeve member provides a passage for suction of fluids and wastes from adjacent the dental handpiece working end and after use the sleeve member can be removed to permit sterilization of the dental handpiece.

4,253,832

DENTAL HANDPIECE

Ronald L. Bailey, St. Peters, Mo., assignor to Young Dental Manufacturing Company, Inc., Hazelwood, Mo.

Filed Oct. 23, 1978, Ser. No. 953,473
Int. Cl.³ A61C *1/05*
U.S. Cl. 433—115 **10 Claims**



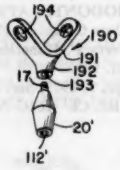
1. In a dental handpiece: a cross head having a bore therein with an open end and an opposite closed end, the open end being adapted for receiving dental tools; a cap fixed in position on the cross head, and closing the closed end of the bore; a driven gear adjacent the cap with the gear teeth facing the open end of the cross head bore; bearing inter-surfaces between the gear and the cap for thrust bearing; a driven shaft connected to the driven gear to be rotated thereby and extending therefrom to adjacent the open end; a tubular bearing fixed on the head, extending from the driven gear to the open end; said driven shaft being rotatably supported in the tubular bearing; and means on the driven shaft for mounting thereon of a dental tool, the cap receiving thrust load from the driven gear, the driven gear receiving thrust loads from the driven shaft, and the driven shaft being adapted to receive thrust loads from the dental tool, whereby the last named thrust loads are delivered to the cap, the cross head having a second bore at its open end of greater diameter than the tubular bearing, a cylindrical recess formed between the tubular bearing and the second bore wherein a flange on a dental tool can be received.

4,253,833

SUBMERGED FUNCTIONAL IMPLANT AND METHOD

Alfred E. Edelman, 2723 Federal St., Camden, N.J. 08105

Division of Ser. No. 925,764, Jul. 18, 1978, Pat. No. 4,187,609, which is a continuation of Ser. No. 819,119, Jul. 26, 1977, abandoned, which is a continuation of Ser. No. 559,226, Mar. 17, 1975, abandoned. This application Oct. 30, 1979, Ser. No. 89,311
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **1 Claim**



1. A submerged dental implant comprising an insert portion including a short hollow internally threaded neck portion adapted to receive the threaded stem of a thin temporary cap member or a similarly threaded stem of an artificial tooth receiving head, said insert portion including an applied cap being adapted to be wholloy submerged in a recess of the patient's jaw and thereafter covered by surface skin of the jaw and after a considerable period of time the surface skin of the gum and the temporary cap of the said submerged implant may be removed, said submerged implant neck portion being then adapted to receive an artificial tooth receiving head member which projects above the surface of the gum to receive an artificial tooth, said insert portion including a V-shaped base portion having opposite legs provided with apertures to receive bone growth therein, said neck portion being formed integral with and projecting from the apex of said V-shaped base portion.

4,253,834

RIDER CLIP WITH OFFSET RETENTION FLAPS AND RETENTION BAR FOR DENTURE

Peter E. Staubli, Foster City, Calif.

Continuation of Ser. No. 953,372, Oct. 23, 1978, Pat. No. 4,209,904. This application Mar. 31, 1980, Ser. No. 135,591
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **2 Claims**

1. A prosthetic device rider clip adapted to be secured to a bridge piece and operative to removably couple onto a retention bar having an arcuate transverse cross-section and secured to an abutment in a jaw, said clip comprising an open tubular segment of a resilient, substantially corrosion-resistant mate-

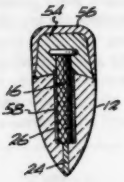
rial, said segment being of a longitudinal extent not substantially exceeding the breadth of a tooth, and comprising a dorsal wall section, first and second inwardly arched side wall sections integral with said dorsal wall section and disposed opposing one another at a minimum separation of less than the diameter of the retention bar, and first and second retention flaps protruding outwardly from said opposing ends, wherein said dorsal wall section and said flaps are adapted to be secured within a casting of said bridge piece.

4,253,835

POST AND SLEEVE ARRANGEMENT

Ormond H. Ware, St. Petersburg, Fla., assignor to Mike Z. Nemethy, Treasure Island, Fla., a part interest

Filed Oct. 1, 1979, Ser. No. 80,574
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—220 **15 Claims**



1. A method for making an impression of a broken tooth, the impression to be used to create a die to form a crown for the broken tooth, said method comprising the steps of:

drilling a post hole into the broken tooth for a retention post;

positioning a first sleeve around the retention post;

slidingly inserting the retention post and the first sleeve into the post hole so that the retention post extends beyond the top of the broken tooth;

making an impression of the top of the broken tooth with the retention post and the sleeve inserted in the post hole;

removing the impression from the top of the broken tooth so that the retention post protrudes from the impression;

removing the first sleeve from the post hole;

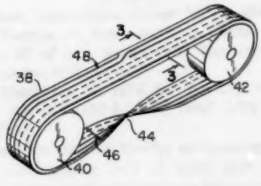
whereby the use of the first sleeve centers the retention post during the making of the impression and, after the removal of the first sleeve, provides a predetermined spacial area between the retention post and the post hole for the placement of a cement.

4,253,836

MOBIUS BELT AND METHOD OF MAKING THE SAME

Joseph P. Miranti, Jr., Nixa, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Sep. 14, 1979, Ser. No. 75,490
Int. Cl.³ F16G *1/08, 5/06*
U.S. Cl. 474—200 **58 Claims**



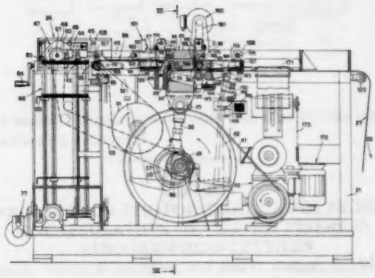
46. An endless belt of spliceless, Mobius strip construction having a 180 degree turn in the surfaces thereof for providing, in effect, one spliceless continuous surface and one spliceless continuous edge of twice the predetermined length of said belt comprising a continuous strength cord wrapped generally in the form of a helix of predetermined length and width and having a 180 degree turn along the length thereof, and an elastomeric material embedding and surrounding said cord.

4,253,837

METHOD AND APPARATUS FOR APPLYING A METAL STRIP TO A SHEET MATERIAL

Carlo Taddei, Lugano, Switzerland, assignor to Seal Spout International, George Town, Grand Cayman, Cayman Islands

Filed Jan. 24, 1979, Ser. No. 6,207
Int. Cl.³ B26B *1/90*
U.S. Cl. 493—86 **43 Claims**



1. A machine for applying a metal strip to a sheet-material unit, characterized in that it comprises, in combination:

(a) a station for forming said metal strip and applying same to said sheet-material unit;

(b) a feeding unit for feeding said sheet-material unit to said forming station;

(c) a feed source for feeding a metal tape to the forming station in superposed relationship relative to said sheet-material unit;

(d) in said forming station, shaping and applying means adapted to sever said strip from said metal tape and to apply it to said sheet-material unit,

(e) first conveyance means adapted to convey the sheet-material unit with the metal strip applied thereto past said shaping and applying means in a direction toward said feed source and to the exterior of the machine;

(f) said forming station is in a position between and generally in line with said feeding unit and said feeding source, so that the units of sheet-material and the metal tape are fed to the station from opposite directions in edge-to-edge approaching relationship that is in counterflow relationship to one another immediately prior to reaching said applying means; and

(g) actuation and control means being further provided for controlling the machine.

42. A method of forming staples in an edge portion of a metal web from which is severed a metal strip and applying the metal strip to an edge portion of a sheet-material blank by embedding the staples of the metal strip into the blank edge portion comprising the steps of positioning an edge portion of a sheet-material blank in superposed overlapped relationship to an edge portion of a metallic web, maintaining the sheet-material blank and the metallic web in generally parallel though spaced apart planes with the edge portions of the sheet-material blank and the metal web in spaced overlapped relationship, forming staples in the metal web edge portion by applying a force thereto in a direction toward and generally normal to the plane of the metal web and the plane of the sheet-material blank, severing the edge portion with the staples therein to form a metal strip, again by the application of a severing force generally normal to and in a direction toward the planes of the metal web and the sheet-material blank, conveying the metal strip toward and against the sheet-material blank edge portion by movement generally normal to the plane of the sheet-material blank, and forcefully embedding the staples of the metal strip into the edge portion of the sheet-material blank.

4,253,838

HEAT TRANSFER PRINTING SHEET AND HEAT TRANSFER PRINTING METHOD USING THE SAME

Shogo Mizuno, Toride, and Sumio Ishii, Inaki, both of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 920,683, Jun. 30, 1978, which is a continuation of Ser. No. 671,066, Mar. 29, 1976, abandoned, which is a continuation of Ser. No. 452,658, Mar. 19, 1974, abandoned. This application Apr. 20, 1979, Ser. No. 31,933
Claims priority, application Japan, Mar. 20, 1973, 48-31440
Int. Cl.[3] D06P *3/70*
U.S. Cl. 8—471 15 Claims

1. A heat transfer printing sheet wherein a pattern comprising (1) a basic dye which will not sublime, melt or evaporate at the temperature employed in the heat transfer printing step, (2) from 0.1 to 20 molar equivalent of an alkaline agent per molar equivalent of basic dye said basic dye and said alkaline agent being together as a component an said sheet and (3) a binder therefor is formed on a surface of a base support sheet.

4,253,839

PROCESS FOR THE FINE DISTRIBUTION OF PIGMENTS OF THE DIOXAZINE SERIES

Ernst Spietschka, Idstein; Manfred Urban, Wiesbaden, and Erich Paulus, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 943,950
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742575
Int. Cl.[3] C09B *19/02, 67/00*
U.S. Cl. 8—565 15 Claims

1. A process for finely comminuting a dioxazine pigment which comprises introducing into a mill having a flexible lining a coarsely crystallized crude dioxazine pigment and a large amount of rotatable grinding bodies relative to the amount of pigment introduced, said grinding bodies making essentially rotating movements, dry milling the coarse pigment within the mill while substantially maintaining its crystallinity until the desired degree of fineness is obtained, so operating the mill that the grinding bodies mainly have a rotating movement and the transfer of kinetic energy thereto is minimized and subsequently mixing the ground pigment with a solvent to disaggregate it.

4,253,840

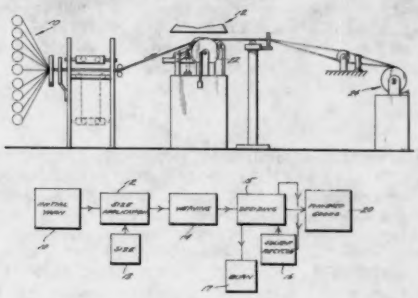
HOT-MELT SIZE COMPOSITIONS AND PROCESS FOR TEXTILES

Walter F. Illman, Greensboro; Delano M. Conklin, Burlington; Clifton H. Karnes, Jr., Greensboro, and Robert C. Malpass, High Point, all of S.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 20, 1979, Ser. No. 22,176
Int. Cl.[3] D06M *15/16;* D06L *1/06*
U.S. Cl. 8—115.6 8 Claims

1. A process for treating textiles comprising the steps of: establishing a continuous feed of warp yarn; continuously applying a warp size to the continuously fed warp yarn to form sized yarn; forming the sized yarn into fabric; desizing the fabric utilizing a solvent; and removing the solvent from the fabric; wherein the improvement comprises:

applying as the warp size a melt warp size consisting essentially of synthetic organic polymer or copolymer and wax, the wax selected from the group consisting essentially of microcrystalline, paraffin, and hydrogenated tallow waxes; and wherein the desizing is accomplished utilizing



a heated hydrocarbon solvent, and wherein the removed solvent is recovered.

4,253,841

PROCESS FOR PHOTOINITIATED, POLYMERIC ENCAPSULATION OF COTTON FIBERS IN DURABLE-PRESS TEXTILES

James A. Harris, Pearl River, and Jett C. Arthur, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 23, 1979, Ser. No. 14,406
Int. Cl.[3] D06M *15/36*
U.S. Cl. 8—116 R 10 Claims

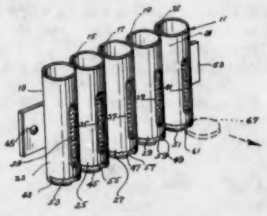
1. A process for photoinitiated polymeric encapsulation of cotton fibers in durable press textiles comprising: irradiating cotton fabrics with near ultraviolet light while totally immersed in, and impregnated with, a vinyl monomer solution.

4,253,842

DETERGENT COMPOSITIONS AND WASHING METHODS INCLUDING AND UTILIZING SEPARATE TABLETS OF COMPONENTS

Robert L. Ehrlich, Wyckoff, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 722,988, Sep. 13, 1976, Pat. No. 4,099,912, which is a continuation of Ser. No. 470,258, May 15, 1974, abandoned. This application Jun. 30, 1978, Ser. No. 920,767
Int. Cl.[3] B08B *3/00*
U.S. Cl. 8—137 8 Claims



1. A packaged detergent composition consisting essentially of a container and, packed in the container, a first plurality of units each comprising a water-soluble synthetic organic detergent component of the composition, and at least one other plurality of units different from those of the first plurality and comprising at least one other component of the composition selected from the group consisting of detergent builders and detergent adjuvants, each unit being in the form of a tablet,

envelope, packet, capsule or other container, and the size of each unit being such that its weight is in the range from 5 to 30 grams, its volume is in the range from 4 to 20 milliliters and is such that one or a simple multiple up to 10 units of each component when dissolved in water produces a liquid washing medium of an operator-formulated composition suitable for washing soiled laundry.

4,253,843

METHOD FOR IMPROVING THE LIGHT FASTNESS OF NYLON DYEINGS USING COPPER PHOSPHATE

Vincent W. Bannigan, Jr., Pottstown, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,202
Int. Cl.³ D06P *5/02, 5/10*
U.S. Cl. 8—624 **19 Claims**

1. The method of improving the light fastness of dyed nylon textile fibers which method comprises exhausting copper phosphate onto the fibers from a solvent system or from an aqueous bath and depositing on the fiber at least 3 parts per million copper phosphate based on the fiber weight; the deposition of the copper phosphate being effected before, simultaneously with or after the dye has been applied to the fibers.

4,253,844

INSOLUBILIZED PROTEINS AND IMMUNOASSAYS UTILIZING THEM

Joseph Limet, Marchin; Cesar L. Cambiaso, Kraainem; Claude H. Moussebois, and Pierre L. Masson, both of Brussels, all of Belgium, assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,260
Claims priority, application United Kingdom, Jan. 26, 1978, 3238/78
Int. Cl.³ G01N *33/54*
U.S. Cl. 23—230 B **23 Claims**

11. A method of immunoassay which includes the step of effecting an immunospecific reaction between an antigen and an antibody or $F(ab')_2$ fragment thereof, wherein there is used a reagent which comprises a protein antigen, an antibody or the $F(ab')_2$ fragments of an antibody, covalently bonded to a water-insoluble substrate by a bridging group which is directly linked to sulphur atoms in the said antigen, antibody or fragments, that portion of said bridging group directly linked to said sulphur atoms being derived from a monochloroacetyl group and that portion of the bridging group bonded to said substrate being derived from an anhydride group.

4,253,845

GAS-LIQUID EQUILIBRATION APPARATUS

Ronald B. Smernoff, Belmont, Calif., assignor to Analytical Products, Inc., Belmont, Calif.

Filed Jan. 30, 1979, Ser. No. 7,768
Int. Cl.³ G01N *33/96, 33/50*
U.S. Cl. 23—230 B **24 Claims**

22. A method of equilibrating a gas with a liquid which fills a generally vertical barrel up to a liquid level therein, said barrel having a piston reciprocally matingly fitting therein and having means for allowing said gas to flow thereoutof above said liquid level therein, comprising:

flowing said gas upwardly through said liquid from an opening in an originally downwardly facing end of said barrel while preventing said liquid from flowing downwardly out of said opening in said barrel until a desired degree of equilibration has been attained;

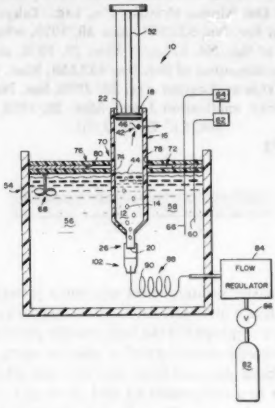
halting said gas flowing while continuing said liquid flow preventing;

blocking off said gas flow allowing means;

inverting said barrel;

stopping said liquid flow preventing; and

advancing said piston sufficiently to expel any remaining gas from between said piston and said, originally generally



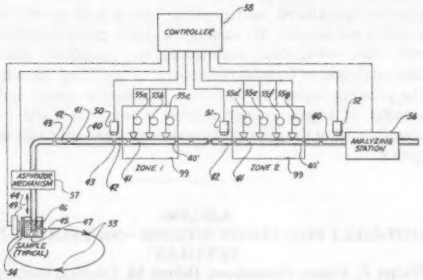
downwardly facing and now generally upwardly facing, end of said barrel.

4,253,846

METHOD AND APPARATUS FOR AUTOMATED ANALYSIS OF FLUID SAMPLES

William J. Smythe, Canterbury, Conn.; Jack Isreeli, Mamaroneck, and Milton H. Pelavin, Chappaqua, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,703
Int. Cl.³ G01N *1/14, 35/08*
U.S. Cl. 23—230 R **31 Claims**



14. A method for quantitatively determining analytes in discrete liquid samples, said method comprising the steps of:

(a) flowing said liquid samples successively as a continuous stream through said conduit;

(b) dividing each of said liquid samples into a number of discrete segments equal, at least, to the number of analytes to be determined;

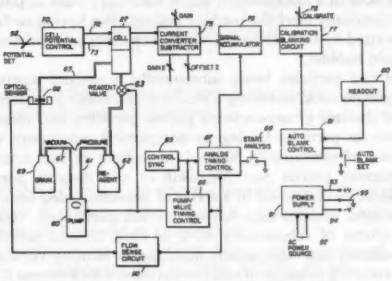
(c) introducing a controlled quantity of at least one reagent of a plurality of reagents into each of said sample segments in each of said sets on a selective basis to react said sample segments in each of said sets in respect of said different analytes; and

(d) analyzing said reacted sample segments in each of said sets in respect of said different analytes.

4,253,847
PREPARING SAMPLE FOR ELECTROCHEMICAL TESTING SYSTEM

Wayne R. Matson, Ayer, and Ronald Vitukevich, Everett, both of Mass., assignors to Environmental Sciences Associates, Inc., Bedford, Mass.

Division of Ser. No. 968,060, Dec. 11, 1978, which is a continuation-in-part of Ser. No. 868,654, Jan. 11, 1978, abandoned. This application Jan. 3, 1980, Ser. No. 108,601
Int. Cl.³ G01N *1/10, 27/26*
U.S. Cl. 23—230 R **11 Claims**



1. In a method for preparing a sample for electrochemical analysis by dissolving said sample in a reagent, wherein said sample is suspected of containing a metal selected from the group consisting of molybdenum, tungsten, titanium, vanadium, and uranium, the improvement wherein said reagent comprises an alcoholic HCl solution.

4,253,848
METHOD FOR DETERMINING OXIDATIVE STATUS OF UNSATURATED LIPIDS AND METHOD FOR EVALUATING ANTIOXIDANT EFFECTIVENESS IN LIPID-POLYPEPTIDE LAYERS

William L. Porter, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1980, Ser. No. 114,033
Int. Cl.³ G01N *31/06, 33/02*
U.S. Cl. 23—230 HC **3 Claims**

1. A method for determining the existing oxidation level of unsaturated lipids in whole foods, fats or oils, comprising:

(a) coating a substrate with a polymerized epsilon-caprolactam comprising a repeating polypeptide of epsilon-amino caproic acid with contamination of unpolymerized free primary amino groups;

(b) measuring the residual excitation beam scattering and the diffraction and fluorescence emission spectrum of the coated substrate and computing its fluorescence index (F.I.);

(c) exposing the coated substrate to volatile compounds escaping from an oxidizing lipid;

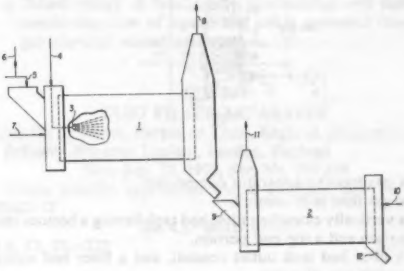
(d) measuring the residual excitation beam scattering and the diffraction and fluorescence emission spectrum of the compounds on the coated substrate formed by reaction of the volatile compounds and the contaminant amines in the coating and computing their fluorescence index (F.I.); and

(e) ascertaining the existing oxidation level by determining the difference between the F.I. computed in step (b) and the F.I. computed in step (d).

4,253,849
GRANULATION OF SODIUM METASILICATE

Georges Vrisakis, Collonges au Mont D'Or, and Jacques Chastel, Mont-Saint-Aignan, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Sep. 26, 1978, Ser. No. 946,027
Claims priority, application France, Sep. 27, 1977, 77 29001
Int. Cl.³ B01J *2/16;* **C01B** *33/32*
U.S. Cl. 23—313 AS **20 Claims**



1. A process for the granulation of sodium metasilicate, comprising (i) establishing, in a first zone, a cloud of anhydrous sodium metasilicate powder; (ii) injecting into said cloud (i), and intimately contacting therewith, an atomized liquid phase which comprises a liquid formulation of a sodium silicate; (iii) said intimate contacting (ii) being conducted in an atmosphere of a drying gas heated to a drying but non-flashing temperature of between about 200° C. and 500° C., whereby crystallization of the anhydrous metasilicate and agglomeration of the thus coated particulates are effected; (iv) next subjecting the effluent cohered granules of said first zone to a state of agitation in a second discrete zone, in an atmosphere of a heating gas having an average temperature of from greater than 42° C. to less than 72° C., which is less than the temperature of the drying gas in said first zone and less than the crystallization temperature of sodium metasilicate pentahydrate and whereby the agitated granules are at least partially converted to the sodium metasilicate pentahydrate; (v) and thence recovering from said second discrete zone a granular sodium metasilicate comprising from about 2 to 6% by weight water with from about 55–80% by weight of this water being in the form of sodium metasilicate pentahydrate.

4,253,850
RESIN BONDED ABRASIVE BODIES FOR SNAGGING METAL CONTAINING LOW ABRASIVE AND HIGH FILLER CONTENT

Charles V. Rue, Petersham, and Kesh S. Narayanan, Holden, both of Mass., assignors to Norton Company, Worcester, Mass.

Filed Aug. 17, 1979, Ser. No. 67,710
Int. Cl.³ B24B *1/00;* **C08J** *5/14*
U.S. Cl. 51—298 **14 Claims**

1. An organic bonded abrasive body having an abrading portion suitable for snagging metal and wherein the abrading portion comprises:

24% to 45% by volume of from 4 to 36 grit size abrasive particles selected from a group consisting of fused aluminum oxide, fused alumina-zirconia, sintered alumina, sintered bauxite, sintered alumina-zirconia, silicon carbide, and mixtures thereof,

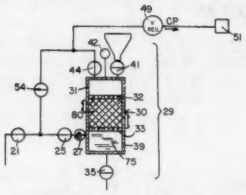
18% to 24% by volume of thermosetting resin, 0 to 8% by volume of pores, and

29% to 56% by volume of filler material containing at least 80% by volume of inorganic material.

4,253,851
GAS PURIFICATION TREATMENT APPARATUSES, SYSTEMS AND PROCESS

Ray Brooks, and Joe H. Lucero, both of Goodwell, Okla., assignors to George A. DeMeritt, Texhoma, Okla.

Filed Mar. 30, 1979, Ser. No. 25,724
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—90 **5 Claims**



1. A gas treating apparatus comprising
(a) a gas feed inlet conduit,
(b) a vertically extending filter bed tank having a bottom end portion and a top end portion,
(c) a filter bed tank outlet conduit, and a filter bed outlet conduit cut-off valve,
(d) said gas feed inlet conduit connected to the bottom end portion of said vertically extending filter bed tank,
(e) said filter bed tank outlet conduit connected to the top end portion of said vertically extending filter bed tank in series with said filter bed outlet conduit cut-off valve,
(f) a series-connected crossover conduit and crossover conduit cut-off valve connecting said gas feed inlet conduit and said filter bed outlet conduit at a conduit connection, said filter bed outlet conduit cut-off valve located between said conduit connection and said top end portion of said filter bed tank, said crossover conduit cut-off valve located between said conduit connection and said gas feed inlet conduit,
(g) said vertically extending filter bed tank comprising a filter bed chamber, a filter bed in said chamber, said filter bed comprising:
(i) a mechanically stable porous mass of discrete glassy-surfaced porous particles, said mass of porous particles having an inter-particle macropore volume of substantially 50% of the volume of said mass of discrete porous particles, each of said discrete porous particles composed of a series of interconnected smooth-walled vesicles and having an intraparticulate vesicle volume of substantially 40% of each of said particle's volume, said interparticle macropores forming vertically extending passages in said porous mass which extend from the top to the bottom of said porous mass,
(ii) a lower horizontally extending rigid perforate plate on the bottom of said bed and an upper horizontally extending rigid perforate plate above the top of said bed, each of said plates perforated by a plurality of equal sized orifices passing through said plate, and
(iii) a volume of liquid in said filter bed chamber, said liquid extending to a vertical height in said filter bed chamber less than the maximum height of said porous mass and at least one-half of the height of said chamber as measured between said upper and lower horizontally extending rigid perforated plates, said porous mass of porous particles extending to a height greater than the height of said liquid in said filter bed chamber and to a height below the height of said upper perforated plate above said lower perforated plate in said filter bed chamber, said liquid wetting said glassy porous particles, said liquid being one in which water and tar are soluble and having a boiling point below 120° F. at 760 mm. pressure and wherein the ratio of (a) the area of the holes in said plates to the area of said plates is smaller than (b) the ratio of the transverse cross-section of the vertical passages in the porous mass to the transverse cross-section section of the porous mass and wherein the hardness of the vesicle walls of said particles is above 5.0 on Mohs' scale and wherein said liquid comprises methyl alcohol and the porous particles are formed of igneous rock.

4. Process of treating a stream of hydrocarbon gas containing tarry particulate impurities and water comprising the steps of
(a) dividing said gas into a plurality of small streams of bubbles and passing said bubbles upwardly through liquid methanol located in vertically extending interparticle spaces of a mechanically stable stationary mass of porous chemically inert sharp-edged bed particles having surfaces wetted by said methanol, while then elastically deforming said bubbles,
said bed particles being substantially equi-sized scoria of igneous rock, and being a mechanically stable porous mass of discrete glossy-surfaced porous particles, said mass of porous particles having an interparticle macropore volume of substantially 50% of the volume of said mass of discrete porous particles, each of said discrete porous particles composed of a series of interconnected smooth-walled vesicles and having an interparticulate vesicle volume of substantially 40% of each of said particle's volume, said interparticle macropores forming vertically extending passages in said porous mass which extend from the top to the bottom of said porous mass and wherein the hardness of the vesicle walls of said particles is above 5.0 on Mohs' scale,
(b) adsorbing said tarry particles at the gas-liquid interfaces of said bubbles and said liquid methanol on the walls of said bubbles,
(c) removing said adsorbed particles from said bubble walls by contacting said deformed walls of said upwardly moving bubbles and particles located in said bubble walls with said sharp-edged bed particles,
(d) passing said removed tarry particles into quiescent volumes of said liquid methanol held within and by said bed particles in communication with said interparticle spaces and interior walls of said bed particles mechanically protect said quiescent volumes from contact with said upwardly moving bubbles,
(e) dissolving said tarry particles in said quiescent volumes of liquid methanol,
(f) terminating the upward passage of said bubbles through said interparticle spaces,
(g) draining off said liquid methanol and the dissolved material therein from said interparticle spaces and from the interior of said bed particles, and
(h) adding fresh liquid methanol to said interparticle spaces.

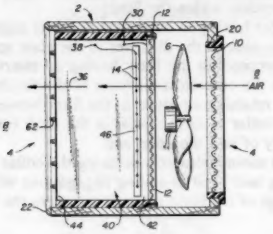
4,253,852
AIR PURIFIER AND IONIZER

Paul C. Adams, Berkeley, Calif., assignor to TAU Systems, Berkeley, Calif.

Filed Nov. 8, 1979, Ser. No. 92,784
Int. Cl.³ B03C *3/09, 3/32, 3/41*
U.S. Cl. 55—126 **9 Claims**

1. An air purifier and ionizer for use in an enclosed area comprising:
a housing having a passageway extending therethrough, said passageway having an entrance end and an exit end in communication with the air in said area;
means for inducing an air flow through said passageway from said entrance to said exit;
a first electrode mounted within said passageway, the active surface of said first electrode consisting essentially of silver;
a second electrode mounted within said passageway spaced from and downstream of said first electrode, the active surface of said second electrode consisting essentially of gold; and

means for imposing an electric field between said first and second electrodes with an interelectrode voltage potential



such that said second electrode is negatively charged with respect to said first electrode.

4,253,853

CONTACTOR AND ENTRAINMENT SEPARATOR

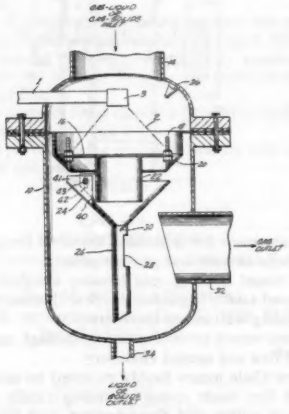
Michael B. Caesar, Lake City, Fla., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 909,895, May 5, 1978, abandoned. This application Oct. 16, 1979, Ser. No. 85,345

The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.

Int. Cl.³ B01D *45/08*

U.S. Cl. 55—226 **12 Claims**



1. A combination liquid-gas contactor and entrainment separator comprising:

a. a housing having inlet means for introducing a flow of gas into said housing, first outlet means for withdrawing liquids and solids, separated from said gas, from said housing, and second outlet means for withdrawing gas, substantially free of entrained liquids and solids, from said housing, said inlet means and said first outlet means being disposed in opposite ends of said housing, said second outlet means being disposed in said housing intermediate said inlet and first outlet means;

b. spray means for injecting a liquid mist into said housing, said spray means being configured and positioned for contacting said liquid mist with the gas introduced into the housing;

c. a member having means defining a first surface for intercepting both the flow of gas introduced by the inlet means and the liquid mist injected by the spray means, and a second surface opposite said first surface;

d. a tube disposed within said housing and extending away from said second surface;

e. annular deflector means disposed adjacent to the member, attached to the housing and extending inward of the housing and positioned relative to the member to provide an opening therebetween; the deflector means being operative for directing the gas flow toward said tube;

f. means for adjusting the position of the member relative to the annular deflector means, thereby varying the size of said opening; and,

g. funnel means at least partly surrounding said tube for conducting flow of liquids and solids separated from the gas into said second outlet means.

4,253,854

DUST FILTER APPARATUS

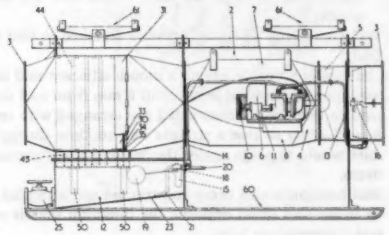
Granville C. James, Burton on Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Sep. 20, 1973, Ser. No. 399,338

Claims priority, application United Kingdom, Sep. 29, 1972, 45042/72

Int. Cl.³ B01D *47/06*

U.S. Cl. 55—227 **16 Claims**



1. Dust filter apparatus comprising a hollow chamber, the chamber defining a gaseous flow duct having an inlet and outlet, a filter unit including a fibrous mat filter means arranged across the duct, and nozzle means in the duct for spraying liquid into the inlet of the gaseous flow duct on an upstream side of the mat filter means, fibers of the mat filter means being nondensely packed, the mat filter means having a low fibre density such that the mat filter tends not to retain the liquid by capillary action and permits flow of liquid throughout a thickness of the filter means in the directions parallel to, and transverse to, the direction of gaseous flow and having a low thickness such that the liquid from the nozzle means saturates the whole of the mat filter means, the arrangement being such that, in use, an effectively continuous body of flowing liquid is formed across the gaseous flow passage, the body of flowing liquid having a thickness virtually equal to the thickness of the mat filter means.

4,253,855

AIR FILTER

Richard E. Jackson, and John E. Sparks, both of Lubbock, Tex., assignors to Horn and Gladden Lint Cleaner, Lubbock, Tex.

Filed Feb. 26, 1979, Ser. No. 15,361

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—290 **7 Claims**

1. In a filter having

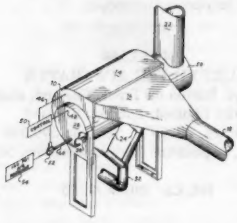
a. a drum having a length and an axis,

b. rotation means for rotating the drum about its axis in a given direction of rotation,

c. a filter screen on the drum,

d. a housing surrounding said drum and defining a plenum between the housing and the drum,

e. a tangential air inlet into the housing,
ee. an air outlet on the housing fluidly connected to the interior of the drum,
f. a suction nozzle on the housing adjacent the drum extending substantially the full length of the drum,
g. and suction means for producing a reduced pressure upon the suction nozzle;
the improved structure comprising:
h. a manifold within the drum,
j. a series of pressure nozzles
(i) attached to the manifold and
(ii) constructed and arranged to produce a jet of high



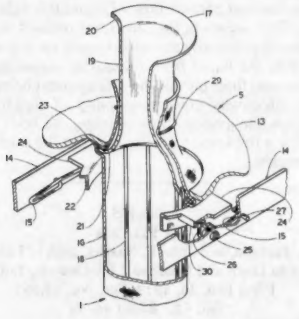
velocity air through the filter screen into the suction nozzle,
k. and a source of air under pressure attached to said manifold,
m. said suction nozzle having a mouth adjacent said drum,
n. said mouth spaced at least about 6 mm from said drum,
o. said air inlet being constructed and arranged with respect to said drum so that a straight line air flow through the inlet would impinge agains the housing and not onto the drum,
p. said rotation means being constructed and arranged so as to rotate said drum opposite the direction the air enters said tangential air inlet.

4,253,856

FILTER ARRANGEMENT

Eugene Paucha, Montreal, Canada, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Nov. 9, 1979, Ser. No. 92,679
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—374 **10 Claims**



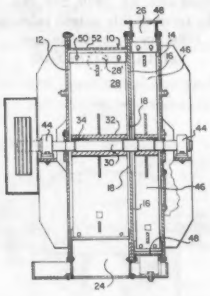
1. A filter installation for a filter housing having a dirty gas inlet and a clean gas outlet, comprising:
an apertured header plate including an aperture of a predetermined diameter disposed between the dirty gas inlet and the clean gas outlet;
a tubular filter;
a venturi-like member extending through the plate aperture into one end of the filter;
said member including a tubular throat portion and an outwardly protruding shoulder proximate one end of said throat portion within the filter;
said shoulder having an outermost diameter at least substantially the same as the diameter of the plate aperture;
a collar surrounding the filter having an interior diameter less than the outermost diameter of the shoulder;
said collar retaining a portion of the filter between the plate and the collar to form a pleat in the filter embracing the periphery of said shoulder; and
attachment means releasably securing the collar to the plate clamping said pleat in sealing engagement with the marginal edge of the plate aperture to secure the filter to the plate.

4,253,857

APPARATUS FOR SEPARATING AN ENTRAINED SOLID FROM A GAS

C. Donald Fisher, Muncy, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 5, 1979, Ser. No. 82,301
Int. Cl.³ B01D *45/14*
U.S. Cl. 55—400 **8 Claims**



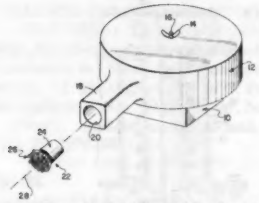
1. A separator for separating the solid from the gas in an entrainment of solid and gas, comprising:
(a) a closed housing, said housing comprised of first and second axially aligned cylindrical chambers with chamber dividing wall means therebetween;
(b) rotor means extending axially through said housing and said first and second chambers;
(c) first blade means fixably mounted on said rotor means, said first blade means extending axially on said rotor means within said first chamber, said first blade means being constructed and arranged to approach contact with the inner cylindrical wall of said first chamber;
(d) second blade means fixably mounted on said rotor means, said second blade means extending axially on said rotor means within said second chamber;
(e) drive means for rotating said rotor means and said first and second blade means;
(f) entrance means for charging the entrainment into said first chamber substantially tangent to the circumferential path of travel of said first blade means;
(g) discharge means in said first chamber for discharging solids separated from the entrainment, said discharge means being substantially tangent to the circumferential path of travel of said first blade means;
(h) port means located centrally in said chamber dividing wall means for communicating entrainment gas in said first chamber with said second chamber; and
(i) exit means in said second chamber for discharging said entrainment gas.

4,253,858

AIR DIFFUSER

Frank Y. Sherbondy, P.O. Box 1106, New Braunfels, Tex. 78130

Filed Nov. 19, 1979, Ser. No. 95,415
Int. Cl.[3] B01D *51/00*
U.S. Cl. 55—419 5 Claims



1. An air diffuser insertable within the intake opening of a carburetor air filter housing, said diffuser comprising:

means projecting into the airstream in advance of said air filter housing to divide said airstream into a multiplicity of separate streams which pass through said diffuser to enter said housing;

a body portion disposed rearwardly of said projecting means, said body portion being insertable within said intake opening to mount said diffuser upon said housing;

said body portion fitting within said intake opening in a substantially airtight manner to prevent air from passing around the outside of said body portion and into said housing; and

a multiplicity of conduits, each having an inner end portion disposed within said body portion and having an outer end portion projecting forwardly of said body portion, said conduit outer end portions forming said means projecting into the airstream;

said inner end portions being disposed parallel to each other and to a central axis of said diffuser;

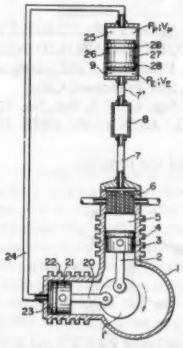
said outer end portions being angled outwardly with respect to said inner end portions.

4,253,859

GAS REFRIGERATOR

Keisuke Naka, Nishio, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 30, 1979, Ser. No. 99,012
Claims priority, application Japan, Dec. 27, 1978, 53/162702
Int. Cl.[3] F25B *9/00*
U.S. Cl. 62—6 8 Claims



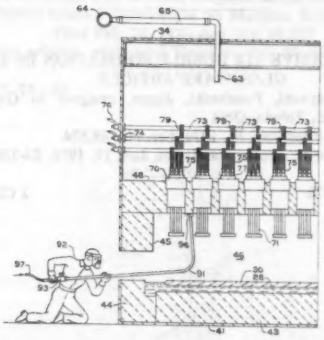
1. A gas refrigerator comprising a driving section which includes first compressing means for cyclically compressing a refrigerating gaseous medium and second compressing means for cyclically compressing a driving gaseous medium with a phase different from that of the first compressing means, cylinder means having floating piston means defined at one end of expansion chamber means and at the other end, driving chamber means, first conduit means communicating said first compressing means with said expansion chamber means, second conduit means communicating said second compressing means with said driving chamber means so that said floating piston means is driven by said driving gaseous medium and means for cooling said refrigerating gaseous medium compressed in said first compressing means.

4,253,860

HEATED LANCE ROOF CLEANING PROCESS

Merritt J. Hummel, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,830
Int. Cl.[3] C03B *18/16*
U.S. Cl. 65—27 9 Claims



1. A method of periodically removing from interior surfaces of a glass forming chamber containing molten tin, tin-containing deposits that build up on the interior surfaces, comprising inserting into the forming chamber movable conduit means, from the end of which issues a stream of gas which will not promote oxidation of tin to tin oxide within the forming chamber, preheating the gas to a temperature of at least 800° F. before passage through the conduit, directing the stream of preheated gas issuing from the conduit at a minor portion of the interior surfaces with sufficient force to mechanically dislodge and to volatilize the deposits from that portion of the surface, moving the conduit to direct the stream at other portions of the interior surfaces so as to incrementally remove deposits from the interior surfaces, withdrawing the conduit from the forming chamber and resuming normal operation of the forming chamber.

4,253,861

METHOD OF COPPER STAINING A GLASS ARTICLE

William A. Graff, Willoughby, and Robert D. Shelley, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 924,017, Jul. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 823,978, Aug. 12, 1977, abandoned. This application Jan. 21, 1980, Ser. No. 113,646
Int. Cl.[3] C03C *21/00*
U.S. Cl. 65—30 E 5 Claims

1. A method of producing a red color stain on a borosilicate glass article utilizing only a single heating step which comprises:

(a) coating the surface of the glass article with a slurry containing cuprous chloride, a cupric salt in sufficient

amounts to retain the cuprous ion in its lower valence state and a particulate inorganic binder to form a porous matrix on the glass surface,

(b) using the coated glass article as a closure for a metal container having sufficient mass to produce a thermal lag at the bottom inner surface of said container when heated,

(c) adding a sufficient quantity of pulverized coal in said container to generate hydrogen and methane upon heating;

(d) heating said closed container under non-reducing atmosphere conditions for a sufficient time period to generate cuprous chloride vapors and exchange the cuprous ions in said vapors with sodium ions in the glass surface, and

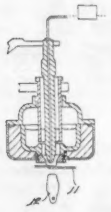
(e) continuing said heating of the closed container without interruption to convert the non-reducing atmosphere conditions within the closed container to a reducing condition by delayed generation of hydrogen and methane for a sufficient time period to reduce the cuprous ions in the glass surface to metallic copper and produce a red stain on the underlying glass surface.

4,253,862

DECORATIVE AIR BUBBLE FORMATION IN A GLASSWARE ARTICLE

Shigeru Kobayashi, Funabashi, Japan, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 14, 1979, Ser. No. 48,574
Claims priority, application Japan, Jun. 19, 1978, 53-73905
Int. Cl.³ C03B *7/08*
U.S. Cl. 65—75 **2 Claims**



1. A method for manufacturing a glassware article having a decorative bubble in a bottom wall section thereof, comprising the steps of vertically reciprocating a plunger of a gob feeder to intermittently extrude molten glass out of an orifice; forcing a predetermined amount of air from the fore end of said plunger into said molten glass within said orifice to make the molten glass contain an air bubble therein; extruding a bubble containing portion of said molten glass out of said orifice; shearing said extruded portion from the remaining molten glass to form a gob; introducing said severed gob into a forming mold and subsequently forming the bubble-containing gob into a glassware article having a decorative bubble encapsulated in the bottom wall thereof.

4,253,863

APPARATUS FOR MASS PRODUCING FIBER OPTIC PREFORMS AND OPTIC FIBERS

Rama Iyengar, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,207
Int. Cl.³ C03B *37/00*
U.S. Cl. 65—181 **10 Claims**

1. Apparatus for manufacturing an optical fiber preform, comprising:

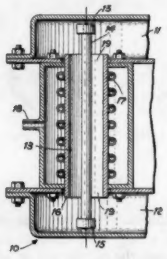
at least one deposition substrate formed of an electrical resistant material;

means for passing an electrical current through said substrate whereby said substrate is heated over its entire length;

enclosure means for receiving said substrate and enclosing it from atmosphere;

inlet means for introducing glass-forming materials in vapor form into the enclosure means;

exhaust means for removing decomposition by-products from the enclosure means; and



a porous member disposed about said substrate and in the path of said vapor between said inlet means and said substrate, whereby the glass-forming materials in vapor form pass through the porous member prior to contacting the surface of the substrate for forming glass on said heated deposition substrate.

4,253,864

SUBSTITUTED-1,2,3-THIADIAZOLE-SAFENING AGENTS

James A. Kloek, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 23, 1979, Ser. No. 59,717
Int. Cl.³ A01N *25/32, 43/02, 37/18*
U.S. Cl. 71—90 **9 Claims**

1. A composition comprising a herbicidally effective amount of 2-chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide and an effective safening amount of a compound selected from the group consisting of:

4-(4-methylphenyl)-1,2,3-thiadiazole;

4-(3-bromophenyl)-1,2,3-thiadiazole;

4-(3-chlorophenyl)-1,2,3-thiadiazole;

4-[3-(trifluoromethyl)phenyl]-1,2,3-thiadiazole;

4-[2-(trifluoromethyl)phenyl]-1,2,3-thiadiazole;

4-[2-chloro-5-(trifluoromethyl)phenyl]-1,2,3-thiadiazole.

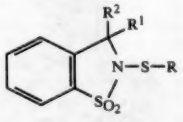
4,253,865

1,1-DIOXO-2-HALOHYDROCARBYLTHIO-1,2-BENZOISOTHIAZOLIDINES

David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 6, 1979, Ser. No. 72,872
Int. Cl.³ A01N *43/80*; C07D *275/06*
U.S. Cl. 71—91 **8 Claims**

1. A compound of the formula:



(1)

wherein R is haloalkyl of 1 to 5 carbon atoms and 1 to 10 halogen atoms, haloalkenyl of 2 to 6 carbon atoms and 1 to 10 halogen atoms or halogenated aryl of 6 to 10 carbon atoms and 1 to 6 halogen atoms; R^1 and R^2 are independently hydrogen,

alkyl of 1 to 6 carbon atoms or R^1 and R^2 are joined to form a 5- or 6-membered aliphatic ring.

5. A fungicidal composition comprising a fungicidally effective amount of a compound defined in claim 1 and a biologically inert carrier.

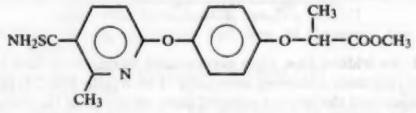
4,253,866

METHYL α-[4-(6'-METHYL-5'-CARBOTHIAMIDO-PYRID-2'-yl)-OXY-PHENOXY]-PROPRIONATE

Rolf Schurter, and Hermann Rempfler, both of Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 816,840, Jul. 18, 1977, Pat. No. 4,133,675.
This application Nov. 20, 1978, Ser. No. 962,518
Claims priority, application Switzerland, Jul. 23, 1976, 9470/76; Jul. 23, 1976, 9471/76
Int. Cl.³ A01N *43/40*; C07D *213/64*
U.S. Cl. 71—94 **4 Claims**

1. The compound of the formula



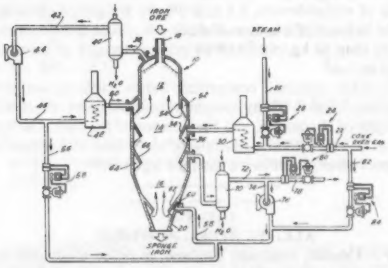
3. A method for combatting weeds in crops of cultivated plants comprising applying thereto a herbicidally effective amount of the compound according to claim 1.

4,253,867

METHOD OF USING A METHANE-CONTAINING GAS FOR REDUCING IRON ORE

Juan F. Price-Falcon, Garza Garcia, and Enrique R. Martinez-Vera, Monterrey, both of Mexico, assignors to Hylsa, S.A., Monterrey, Mexico

Filed Oct. 15, 1979, Ser. No. 84,750
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—35 **8 Claims**



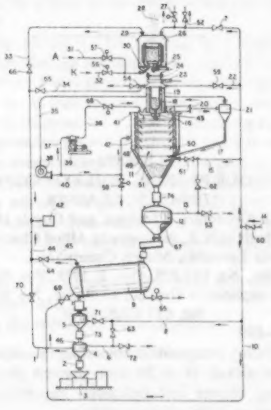
1. The method of reducing particulate iron ore to sponge iron particles in a vertical moving bed reactor having a reduction zone in the upper part thereof into which a hot reducing gas is fed to cause reducing gas to flow through a portion of said bed to reduce iron ore thereof to sponge iron, a cooling zone in the lower part of the reactor through which a cooling gas is circulated and externally cooled to cool said sponge iron and an intermediate zone between the point at which said reducing gas is fed to said reduction zone and the upper end of the path of said cooling gas through said cooling zone, which comprises preparing a mixture of steam and a gas containing up to about 30% by volume of methane, heating said gaseous mixture to a temperature of 700° to 900° C., passing said heated gaseous mixture through said intermediate zone in contact with the iron-bearing material therein to reform said gas and increase the proportion of reducing constituents therein and causing said reformed gas to flow into said reduction zone.

4,253,868

APPARATUS FOR NITRIDING METAL MATERIALS AND FERROALLOYS UNDER PRESSURE

Ivan D. Nikolov; Tzolo V. Rashev; Iliya G. Chorbov; Ivan M. Peychev; Hristo G. Penchev; Marin I. Marinov, and Alexander K. Bradvarov, all of Sofia, Bulgaria, assignors to Institute po Metaloznanie I Technologia Na Metalite, Sofia, Bulgaria

Filed Feb. 26, 1979, Ser. No. 15,337
Claims priority, application Bulgaria, Feb. 27, 1978, 38859
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—59 **8 Claims**



1. An apparatus for nitriding metal materials and ferroalloys under pressure comprising:

a melting furnace;

an intake chamber beneath said melting furnace and connected thereto;

a crucible disposed in said intake chamber and having a fluid-operated pulverizer mounted in the base thereof;

a pulverizing chamber beneath said intake chamber and connected thereto;

a dust-catching cyclone having a suction collector connected to the upper portion of said pulverizing chamber;

a mixing hopper connected to an outlet formed in the lower portion of said pulverizing chamber;

a pipe furnace having an inlet end connected to said exchange hopper and an outlet end connected to an intermediate hopper;

an end hopper beneath said intermediate hopper and connected thereto and feeding into a briquetting installation; and

a first pipe conduit system connected to said melting furnace, said intake chamber, said pulverizing chamber, said mixing hopper, said pipe furnace, said intermediate hopper and said end hopper for feeding pressurized nitrogen thereto and a second pipe conduit system for the evacuation thereof.

4,253,869

SEMI-PRECIOUS ALLOY

Emil M. Prosen, Bala-Cynwyd, Pa., assignor to Neoloy Products, Inc., Posen, Ill.

Filed Mar. 31, 1980, Ser. No. 135,882
Int. Cl.[3] C22C *19/07*
U.S. Cl. 75—134 C 4 Claims

1. A semi-precious alloy for use in orthopedic and dental appliances consisting essentially, in parts by weight, of:

Cobalt	48–58%
Chromium	17–27%
Tungsten	7–15%
Ruthenium	7–15%
Molybdenum	1–4%
Manganese	0.5–1.5%
Niobium	0.5–1.5%
Boron	0.1–0.2%
Iron	0.5–1.5%
Copper	0.5–2%

4,253,870

HOMOGENEOUS BRAZING FOILS OF COPPER BASED METALLIC GLASSES

Nicholas J. DeCristofaro, Chatham, and Claude Henschel, Mt. Freedom, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 947,329, Oct. 2, 1978, Pat. No. 4,209,570.
This application Oct. 26, 1979, Ser. No. 88,431
Int. Cl.[3] C22C *9/06*
U.S. Cl. 75—159 3 Claims

1. A metal alloy composition consisting essentially of 5 to 40 atom percent nickel, 15 to 20 atom percent phosphorus, the balance being copper and incidental impurities, said alloy having at least partially glassy structure.

4,253,871

ALLOYS FOR MAKING ELECTRODE SUPPORTS IN LEAD ACCUMULATORS

Gerard Dalibard, Sevres, and Nicole Viaud, Ville d'Avray, both of France, assignors to Compagnie Europeenne d'Accumulateurs, Paris, France

Filed Jul. 12, 1979, Ser. No. 56,937
Claims priority, application France, Jul. 20, 1978, 78 21502
Int. Cl.[3] H01M *4/38*
U.S. Cl. 75—166 B 6 Claims

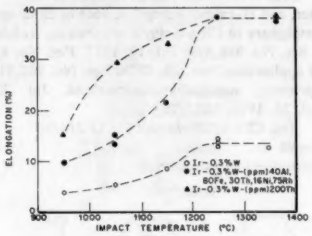
1. A lead-antimony alloy containing less than 4% antimony by weight and intended for use in manufacturing supports for the electrodes of lead accumulators, further comprising a mixture of rare earths, the concentration of the said mixture lying between 0.001 and 1%.

4,253,872

THORIUM DOPED IRIDIUM ALLOY FOR RADIOISOTOPE HEAT SOURCES

Chain-Tsuan Liu; Henry Inouye; Anthony C. Schaffhauser, all of Oak Ridge, and Calvin L. White, Powell, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 16, 1977, Ser. No. 769,124
Int. Cl.[3] C22C *5/04*
U.S. Cl. 75—172 R 8 Claims



1. An iridium base alloy composition having enhanced impact resistance consisting essentially of by weight 100–500 ppm thorium and the balance selected from the group of (a) iridium and (b) iridium and 0.2–2% tungsten.

4,253,873

TITANIUM-BASED ALLOY HAVING HIGH MECHANICAL STRENGTH

Masayuki Sagoi, Yokohama; Masayuki Itoh, Kawasaki; Masami Miyauchi, and Osamu Watanabe, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 25, 1979, Ser. No. 60,732
Claims priority, application Japan, Jul. 28, 1978, 53-92365; Feb. 28, 1979, 54-21914
Int. Cl.[3] C22C *14/00*; C22F *1/18*
U.S. Cl. 75—175.5 10 Claims

1. A titanium-based alloy of a high mechanical strength, comprising 2.0 to 5.0% by weight of aluminum, 1.5 to 5.0% by weight of molybdenum, 6.1 to 9.0% by weight of chromium, and the balance of titanium, the alloy having a tensile strength of more than 88 kg/mm^2 and an impact strength of more than 6.6 kg. m/cm^2.

6. A blade material, comprising 2.0 to 5.0% by weight of aluminum, 1.5 to 5.0% by weight of molybdenum, 6.1 to 9.0% by weight of chromium, and the balance of titanium, the blade material having a tensile strength of more than 88 kg/mm^2 and an impact strength of more than 6.6 kg.m/cm^2.

4,253,874

ALLOYS STEEL POWDERS

Robin T. Cundill, Sheffield, England, assignor to British Steel Corporation, England

Continuation of Ser. No. 738,627, Nov. 3, 1976, abandoned. This application Sep. 14, 1978, Ser. No. 942,276
Int. Cl.[3] B22F *3/00, 1/00*
U.S. Cl. 75—246 5 Claims

1. In a method of manufacturing heat treated hardened steel components comprising the steps of annealing a steel powder in an atmosphere consisting wholly or essentially of hydrogen or dissociated ammonia at a temperature between 700° and 900° C. to produce one or more compacts from the annealed powder, sintering the compacts in an atmosphere consisting wholly or essentially of hydrogen or dissociated ammonia at a temperature between 900° and 1300° C., densifying the sintered compacts and heat treating the densified components, the improvement comprising (i) forming said steel powder by water atomising a prealloyed steel melt to produce a powder

consisting of, by weight, from 0.9 to 1.5% carbon, 1.2 to 2.0% chromium, less than 0.05% silicon, less than 0.1% manganese and an element selected from the group consisting of 0.2 to 1.0 molybdenum, 0.2 to 1.0% nickel, up to 0.3% phosphorous, and up to 1.0% copper, and combinations of two or more of said elements, the balance, apart from impurities, being iron, and (ii) sintering the compacts in an atmosphere consisting wholly or essentially of hydrogen or dissociated ammonia having a dew-point of less than −10° C. at a temperature between 900° and 1300° C., such that the oxygen content of the sintered compacts is reduced to less than 250 parts per million.

5. Compacts manufactured according to the method of claim 1.

4,253,875

CATALYTIC LACQUER FOR PRODUCING PRINTING CIRCUITS

Kurt Heymann, and Rolf Rolff, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 821,301, Aug. 1, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,327

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1976, 2635457

Int. Cl.³ C23C *3/02*; C09D *5/24*

U.S. Cl. 106—1.26 **6 Claims**

1. Catalytic lacquer for the production of printed circuit boards using basic materials and metal deposition methods having a composition of:

(a) a binding agent comprising water soluble or dispersable compounds selected from the group consisting of acrylic resins, phenolic resins, methyl and carboxymethyl cellulose, guar, gelatin, zeins and alginates;

(b) water;

(c) a metal salt selected from the group consisting of water soluble palladium, copper, silver, gold and nickel salts;

(d) a complex former for said metal; and

(e) a reducing agent.

4,253,876

CORROSION INHIBITORS

Richard L. Godar, St. Louis, Mo.; Carl C. Hendricks, E. Alton, Ill., and Kenneth R. Roux, St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 19, 1980, Ser. No. 122,201

Int. Cl.³ C09D *5/08*

U.S. Cl. 106—14.42 **8 Claims**

1. A composition comprising

(1) an alkenyl or alkyl succinic acid or the anhydride thereof; and

(2) a triester of about 3 moles of an alkenyl or alkyl succinic acid or the anhydride thereof and about 1 mole of a trialkanolamine.

4,253,877

ANTI-FOULING MARINE PAINTS CONTAINING MICROENCAPSULATED ANTI-FOULING AGENTS AND THE PROCESS OF MICROENCAPSULATION

John B. Miale, Coconut Grove; August Miale, Jr., Key Biscayne, and Raymond P. Porter, Miami, all of Fla., assignors to University of Miami, Coral Gables, Fla.

Filed Aug. 2, 1979, Ser. No. 62,985

Int. Cl.³ C09D *5/16*

U.S. Cl. 106—18.35 **14 Claims**

1. A process for microencapsulating a water-immiscible liquid comprising:

(a) mixing about 0.9 to about 1.1 parts by weight of gelatin Type A, about 0.9 to about 1.1 parts by weight of gum acacia, and about 45 to about 47 parts by weight of water at a temperature of above about 50° C. to form a colloidal solution,

(b) mixing about 3.9 to about 4.1 parts by volume of said water-immiscible liquid, about 7.6 to about 7.9 parts by volume of water and about 0.1 to about 10 percent of an emulsifying agent based on the combined weight of the water-immiscible liquid and the water at a temperature of above about 50° C.,

(c) homogenizing the mixture prepared in step (b) to form a macroemulsion of the water-immiscible liquid, maintaining the emulsion at a temperature of above about 50° C. during the emulsification until the dispersed droplets of the water-immiscible liquid are of the desired size.

(d) gradually mixing the emulsion of the water-immiscible liquid freshly prepared in step (c) with the colloidal solution of gelatin and gum acacia prepared in step (a) at a temperature of above about 50° C. and at a pH of about 4.5,

(e) allowing the mixture of step (d) to cool so that the droplets of water-immiscible liquid are encapsulated by coalescing complex coacervate,

(f) cooling the mixture to a temperature in the range of about 4° C. to about 10° C.,

(g) washing sedimented microcapsules in cold water to remove the excess complex coacervate not used in the encapsulation of the water-immiscible chemical,

(h) resuspending the microcapsules in cold water to a volume equal to at least about that in which the encapsulation occurred,

(i) gradually adding a cold solution of a mono- or polyvalent cross-linking or fixing agent, until a final concentration of about 1 to 2 percent by volume is reached,

(j) stirring for at least about 15 minutes at a temperature of about 4° C. to about 10° C., and maintaining the mixture at that temperature for at least about 4 hours to allow for the complete cross-linking of the gelatin-gum acacia capsule wall, wherein the encapsulated water-immiscible chemical is slowly mixed in steps (e), (f), (i) and (j) to prevent the nascent capsules from adhering to one another,

(k) washing the fixed capsules in water to remove the fixative,

(l) separating the microcapsules from the water at room temperature, and

(m) drying the separated microcapsules.

4,253,878

LIGHT PROTECTIVE BOTTLE GLASS

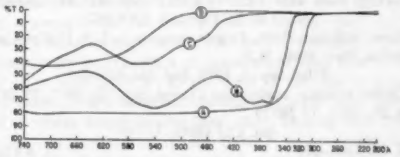
Robert L. Weaver, Montreal West, and Alastair M. Jamieson, Montreal, both of Canada, assignors to The Molson Companies Limited, Toronto, Canada

Filed Dec. 26, 1979, Ser. No. 106,936

Claims priority, application Canada, May 22, 1979, 328016

Int. Cl.³ C03C *3/04, 3/30*

U.S. Cl. 106—52 **1 Claim**



1. A light protective bottle glass comprising an Ultraviolet Absorbing Green glass in combination with nickel oxide in the amount of 0.065% by weight based on the weight of said glass, said nickel oxide being capable of blocking or substantially reducing the transmission of light having wavelengths in the range of 450 to 500 nm while imparting additional green color to the glass.

4,253,879

SHAPED ARTICLE COMPRISING A PERMANENTLY PLASTICIZED CELLULOSE HYDRATE COMPOSITION AND PREPARATION THEREOF

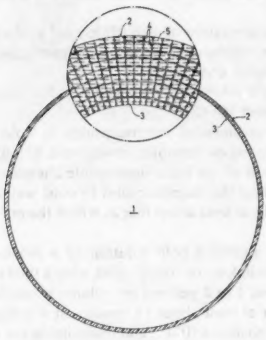
Klaus-Dieter Hammer, Mainz; Günter Gerigk, Oberursel; Wolf-Rainer Neeff, Wiesbaden, and Max Bytzek, Naurod, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,034

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1976, 2654427

Int. Cl.[3] C08L *1/24*

U.S. Cl. 106—165 27 Claims



1. A shaped article comprising a permanently plasticized cellulose hydrate composition comprising a cellulose hydrate, a plasticity enhancing amount between about 0.5 and 40% by weight relative to said cellulose hydrate of at least one substantially water-insoluble ester of an acid consisting essentially of an aliphatic monocarboxylic acid containing from about 16 to about 18 carbon atoms and a polyalcohol comprising at least two hydroxy groups at least one of which is esterified with said aliphatic monocarboxylic acid and at least another of which is esterified with a carboxylic acid having from about 2 to about 8 carbon atoms containing a second functional group selected from the group consisting of hydroxy and carboxyl, and from about 5 to 25% by weight of water, wherein said composition is produced by a method comprising the steps of mixing a viscose containing solution with a liquid comprising said substantially water-insoluble ester to form a liquid mixture, and introducing the liquid mixture into a precipitating liquid to precipitate said shaped article comprising cellulose hydrate, whereby said ester permanently plasticizes said composition by being highly resistant to removal by water during subsequent handling and use of the shaped article.

4,253,880

DEVICE FOR THE CONVERSION OF SOLAR ENERGY INTO ELECTRICAL ENERGY

Jacques Bellugue, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

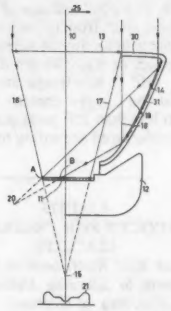
Filed Sep. 5, 1978, Ser. No. 939,697

Claims priority, application France, Sep. 23, 1977, 77 28777; Sep. 23, 1977, 77 28779

Int. Cl.[3] H01L *31/00*

U.S. Cl. 136—259 4 Claims

1. A device for concentrating radiant energy such as solar energy or the like onto a radiation-sensitive cell, said device comprising a radiation sensitive cell and optical means including a central lens and an annular toric mirror positioned to form from radiation incident thereon an annular radiation spot in the plane of the cell such that the outer periphery of said annular spot coincides with the periphery of the cell in the case of correct alignment and arranged so that a sector of the toric mirror illuminates a sector of the cell which is disposed opposite said sector of said mirror relative to the optical axis of the lens-mirror system, and said lens being positioned to form from radiation incident thereon a radiation spot in the plane of the



cell of an area which is substantially equal to the radiation-sensitive area of said cell so that the resultant radiation spot formed on said cell by said lens-mirror system has a radiation intensity which is smaller in the center than at the periphery.

4,253,881

SOLAR CELLS COMPOSED OF SEMICONDUCTIVE MATERIALS

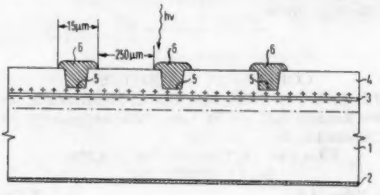
Rudolf Hezel, Ringstr. 23, 8521 Spardorf, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,248

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 2846096; Dec. 11, 1978, 2853412

Int. Cl.[3] H01L *31/04*

U.S. Cl. 136—256 23 Claims



1. A solar cell having a body composed of a semiconductive material with an active zone in which charge carriers are generated by energy impinging upon such cell and penetrating into it, said cell having an electrically insulating layer on the incident surface of said semiconductive material comprised of a double layer with metal contacts positioned therein and overlying said active zone, said double layer consisting of a first layer having a thickness greater than 0 and less than about 4 nm and being directly applied onto said semiconductive body and being composed of a material selected from the group consisting of natural silicon oxide and a silicon oxide generated at temperatures below 800° C., and a second layer directly applied onto said first layer and being composed of a material selected from the group consisting of silicon nitride and silicon oxynitride.

4,253,882

MULTIPLE GAP PHOTOVOLTAIC DEVICE

Vikram L. Dalal, Newark, Del., assignor to University of Delaware, Newark, Del.

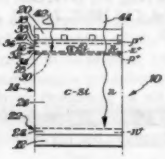
Filed Feb. 15, 1980, Ser. No. 121,802

Int. Cl.[3] H01L *31/04*

U.S. Cl. 136—249 12 Claims

1. In a multiple gap photovoltaic device having an opaque

electrical contact and a transparent electrical contact with a first cell and a second cell therebetween and with the first cell being adjacent the transparent electrical contact and the sec-



ond cell being adjacent the opaque electrical contact, the improvement being said first cell being made from an amorphous semiconductor, and said second cell being made from a crystalline semiconductor.

4,253,883

FE-CR-CO PERMANENT MAGNET ALLOY AND ALLOY PROCESSING

Sungho Jin, Meyersville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 924,138, Jul. 13, 1978, abandoned. This application Nov. 9, 1979, Ser. No. 92,941

Int. Cl.³ H01F 1/02

U.S. Cl. 148—103 **17 Claims**

1. Method for producing a magnetic element comprising a body of an alloy consisting of 25–29 weight percent Cr, 7–12 weight percent Co, and remainder Fe CHARACTERIZED IN THAT said method comprises the steps of (1) subjecting said body to an annealing temperature which is such that, (a) said annealing temperature is greater than or equal to 650 degrees C., (b) said annealing temperature is less than or equal to a temperature which is obtained by approximate linear interpolation between a temperature of 950 degrees C. corresponding to an alloy comprising 25 weight percent Cr and 7 weight percent Co, a temperature of 875 degrees C. corresponding to an alloy comprising 25 weight percent Cr and 12 weight percent Co, a temperature of 1100 degrees C. corresponding to an alloy comprising 29 weight percent Cr and 7 weight percent Co and a temperature of 975 degrees C. corresponding to an alloy comprising 29 weight percent Cr and 12 weight percent Co, (c) said annealing temperature is less than or equal to 1000 degrees C. whereby an average grain size not exceeding 70 micrometers is obtained in said alloy, (2) forming said body into a desired shape at a temperature not exceeding 100 degrees C. either by wire drawing or deep drawing by an amount corresponding to a cross-sectional area reduction of at least 50 percent or by deep drawing or bending so as to result in a change of direction of at least 30 degrees, the resulting radius of curvature being such that it does not exceed a value which is proportional to change in direction, which for a 30 degree change in direction is equal to the thickness of the part being bent, and which for a 90 degree change of direction is equal to 4 times the thickness of the part being bent, and (3) aging said alloy.

4,253,884

TREATING NICKEL BASE ALLOYS

Gernant E. Maurer, New Hartford, and William J. Boesch, Utica, both of N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,581

Int. Cl.³ C22F 1/10

U.S. Cl. 148—13.1 **14 Claims**

1. A method of heat treating and coating a nickel base alloy consisting essentially of, by weight, from 12.0 to 20.0% chromium, from 4.0 to 7.0% titanium, from 1.2 to 3.5% aluminum, from 12.0 to 20.0% cobalt, from 2.0 to 4.0% molybdenum, from 0.5 to 2.5% tungsten, from 0.005 to 0.048% boron, from 0.005 to 0.15% carbon, up to 0.75% manganese, up to 0.5% silicon, up to 1.5% hafnium, up to 0.1% zirconium, up to 1.0% iron, up to 0.2% of rare earth elements that will not lower the incipient melting temperature below the solvus temperature of the gamma prime present in the alloy, up to 0.1% of elements from the group consisting of magnesium, calcium, strontium and barium, up to 6.0% of elements from the group consisting of rhenium and ruthenium, balance essentially nickel; said titanium plus said aluminum content being from 6.0 to 9.0%, said titanium and aluminum being present in a titanium to aluminum ratio of from 1.75:1 to 3.5:1; said heat treatment being a precipitation hardening heat treatment; said coating operation being incorporated within said heat treatment; said method comprising the steps of: heating said alloy at a temperature of at least 2050° F. to put most of the coarse gamma prime particles into solution; cooling said alloy; treating said alloy within the temperature range of between 1800° and 2000° F. to initiate the formation of and form randomly dispersed gamma prime particles; cooling said alloy; treating said alloy within the temperature range of between 1500° and 1800° F. to precipitate fine gamma prime particles, to coarsen existing gamma prime particles and to precipitate discrete carbide particles; coating said alloy, said coating being a cobalt, nickel or iron base alloy; treating said coated alloy at a temperature of at least 1600° F. to lessen the sharp differential in chemistry between said coating and said alloy at the interface thereof; cooling said alloy; and treating said alloy within the temperature range of between 1300° and 1500° F. to precipitate fine gamma prime particles, and discrete carbide particles at grain boundaries.

4,253,885

TREATING NICKEL BASE ALLOYS

Gernant E. Maurer, New Hartford, and William J. Boesch, Utica, both of N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,584

Int. Cl.³ C22F 1/10

U.S. Cl. 148—13.1 **10 Claims**

1. A method of heat treating and coating a nickel base alloy consisting essentially of, by weight, from 12.0 to 20.0% chromium, from 4.0 to 7.0% titanium, from 1.2 to 3.5% aluminum, from 12.0 to 20.0% cobalt, from 2.0 to 4.0% molybdenum, from 0.5 to 2.5% tungsten, from 0.005 to 0.048% boron, from 0.005 to 0.15% carbon, up to 0.75% manganese, up to 0.5% silicon, up to 1.5% hafnium, up to 0.1% zirconium, up to 1.0% iron, up to 0.2% of rare earth elements that will not lower the incipient melting temperature below the solvus temperature of the gamma prime present in the alloy, up to 0.1% of elements from the group consisting of magnesium, calcium, strontium and barium, up to 6.0% of elements from the group consisting of rhenium and ruthenium, balance essentially nickel; said titanium plus said aluminum content being from 6.0 to 9.0%, said titanium and aluminum being present in a titanium to aluminum ratio of from 1.75:1 to 3.5:1, said heat treatment being a precipitation hardening heat treatment; said coating operation being incorporated within said heat treatment; said method comprising the steps of: heating said alloy at a temperature of at least 2050° F. to put most of the coarse gamma prime particles into solution; coating said alloy, said coating being a cobalt, nickel or iron base alloy; treating said coated alloy at a temperature of at least 1600° F. to lessen the sharp differential in chemistry between said coating and said alloy at the interface thereof; treating said alloy within the temperature range of between 1500° and 1800° F. to precipitate fine gamma prime particles, to coarsen existing gamma prime particles and to precipitate discrete carbide particles; cooling said alloy; and treating said alloy within the temperature range of between 1300° and 1500° F. to precipitate additional fine gamma prime particles, and discrete carbide particles at grain boundaries.

4,253,886

CORROSION RESISTANT FERROMAGNETIC METAL POWDERS AND METHOD OF PREPARING THE SAME

Masashi Aonuma, and Yasuo Tamai, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 634,103, Nov. 21, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,864

Claims priority, application Japan, Nov. 21, 1974, 49-134467

Int. Cl.³ H10F *1/02*

U.S. Cl. 148—105 **76 Claims**

1. A method of preparing a corrosion-resistant ferromagnetic metal powder after forming said ferromagnetic metal powder comprising washing the formed ferromagnetic metal powder with a solution containing

(a) at least one volatile corrosion inhibitor, said volatile corrosion inhibitor being an organic amine, amide or imide, or an organic or inorganic salt thereof, containing 1 to 4 nitrogen atoms and 1 to 12 carbon atoms and having a molecular weight of 50 to 200 and a vapor pressure of about 0.1×10^{-5} to 1×10^{2} mmHg at a temperature of 15° to 25° C.;

(b) (1) water, (2) an organic solvent miscible with water, or (3) a mixture of water and at least one organic solvent miscible with water; and

(c) an anionic surface active agent selected from the group consisting of a carboxylic acid or salt thereof, a salt of a sulfuric acid ester, a salt of a phosphoric acid ester, a salt of a dithiophosphoric acid ester and a salt of a sulfonic acid.

2. A method of preparing a corrosion resistant ferromagnetic metal powder after forming said ferromagnetic metal powder comprising washing the formed ferromagnetic metal powder with a solution containing

(a) at least one volatile corrosion inhibitor, said volatile corrosion inhibitor being an organic amine, amide or imide, or an organic or inorganic salt thereof, containing 1 to 4 nitrogen atoms and 1 to 12 carbon atoms and having a molecular weight of 50 to 200 and a vapor pressure of about 0.1×10^{-5} to 1×10^{2} mmHg at a temperature of 15° to 25° C.; and

(b) (1) water, (2) an organic solvent miscible with water, or (3) a mixture of water and at least one organic solvent miscible with water;

and additionally contacting said ferromagnetic metal powder thereafter with an aqueous solution containing an anionic surface active agent selected from the group consisting of a carboxylic acid or salt thereof, a salt of a sulfuric acid ester, a salt of a phosphoric acid ester, a salt of a dithiophosphoric acid ester and a salt of a sulfonic acid.

3. A method of preparing a corrosion resistant ferromagnetic metal powder after forming said ferromagnetic metal powder comprising drying the formed ferromagnetic metal powder in an atmosphere containing at least one volatile corrosion inhibitor, said volatile corrosion inhibitor being an organic amine, amide or imide, or an organic or inorganic salt thereof, containing 1 to 4 nitrogen atoms and 1 to 12 carbon atoms and having a molecular weight of 50 to 200 and a vapor pressure of about 0.1×10^{-5} to 1×10^{2} mmHg at a temperature of 15° to 25° C.; and additionally contacting said ferromagnetic metal powder with an aqueous solution containing an anionic surface active agent selected from the group consisting of a carboxylic acid or salt thereof, a salt of a sulfuric acid ester, a salt of a phosphoric acid ester, a salt of a dithiophosphoric acid ester and a salt of a sulfonic acid.

4,253,887

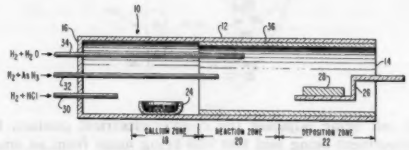
METHOD OF DEPOSITING LAYERS OF SEMI-INSULATING GALLIUM ARSENIDE

Stuart T. Jolly, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,023

Int. Cl.³ H01L *21/205, 21/322*

U.S. Cl. 148—175 **10 Claims**



1. A method of depositing an epitaxial layer of semi-insulating gallium arsenide on a substrate comprising the steps of:

(a) bringing the substrate into contact with a gaseous mixture containing gallium, arsenic and oxygen and

(b) thermally activating said material to cause the formation of gallium arsenide and oxygen which deposits on said substrate as an epitaxial layer of oxygen-doped gallium arsenide.

4,253,888

PRETREATMENT OF PHOTORESIST MASKING LAYERS RESULTING IN HIGHER TEMPERATURE DEVICE PROCESSING

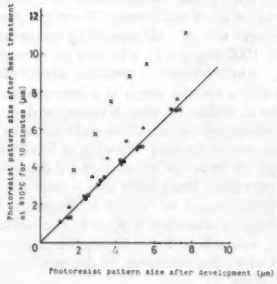
Kazuya Kikuchi, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jun. 11, 1979, Ser. No. 47,241

Claims priority, application Japan, Jun. 16, 1978, 53-73420; Nov. 20, 1978, 53-143641; Nov. 20, 1978, 53-143643

Int. Cl.³ H01L *21/26;* B05D *3/06*

U.S. Cl. 148—187 **34 Claims**



1. A method of making a semiconductor device comprising the steps of:

(1) forming a photoresist film pattern having a predetermined shape on a principal face of a semiconductor substrate,

(2) hardening said photoresist film pattern by changing the physical property of at least the exposed surface thereof, and

(3) forming an impurity region in said semiconductor substrate in a diffusion process by using said hardened photoresist film pattern as a diffusion mask at a temperature higher than a heat resistant temperature of the photoresist film pattern formed in step (1).

4,253,889

TWO-COMPONENT EXPLOSIVE COMPOSITION

Michel E. Maes, 14508 SE. 51st St., Bellevue, Wash. 98006

Filed Nov. 29, 1978, Ser. No. 964,488
Int. Cl.[3] C06B *31/32*
U.S. Cl. 149—47 12 Claims

1. A two-component explosive composition sensitive to a No. 6 blasting cap, each component of the two-component mixture being non-detonable in an of itself, comprising:

a dry component comprising a granular solid oxidizer selected from the group consisting of alkali and alkaline earth metal nitrates, alkali and alkaline earth metal perchlorates, ammonium nitrate and ammonium perchlorate; and

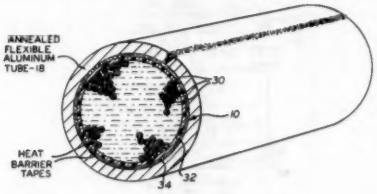
a liquid component in admixture with the dry component comprising a non-self reacting liquid compound selected from the group consisting of halogenated hydrocarbons and formamide with a fuel value of less than 5 kcal./gm. and a non-cap-sensitive liquid nitro-aliphatic hydrocarbon, the amount of liquid component relative to the dry component being sufficient to result in at least 2% by weight and not more than 40% by weight of the liquid nitro-aliphatic hydrocarbon based on the weight of the dry component.

4,253,890

FLAME RETARDANT INSIDE WIRING CABLE WITH AN ANNEALED METAL SHEATH

William J. Brorein, Whippany, N.J., assignor to General Cable Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 845,874, Oct. 25, 1977, Pat. No. 4,154,976. This application Nov. 13, 1978, Ser. No. 959,904
Int. Cl.[3] H01B *13/26, 13/06*
U.S. Cl. 156—55 9 Claims



1. The method of making a communication cable from a multitude of similar individual pre-insulated conductors, and with the conductors brought together to form a core surrounded by heat-insulating tapes which method comprises advancing the cable core, folding around the advancing core a metal sheath of greater inside diameter than the outside diameter of the multi-conductor core, welding together the edge portions of a seam of the sheath, drawing the welded sheath down to a snug fit around the multi-conductor core, annealing the metal of the sheath to increase the flexibility of the cable, and protecting the insulation on the conductors of the core that are near the periphery of the core by using the layer of tape as a heat barrier to provide protection from the heat that anneals the metal sheath by making the layer of tape of a material that does not melt or burn when exposed to the annealing heat that flows through the metal shield during the annealing operation, and making the heat barrier layer of a thickness much less than the radius of the core, and crowding the insulated conductors together in contact with one another in the core, and leaving the sheath as the outside surface of the cable for fire protection, and free to slide longitudinally on the surface of the core when the sheath is severed circumferentially at a location longitudinally spaced back from an end of the cable to expose the conductors of the core for making electrical and mechanical connections.

4,253,891

PROCESS AND DEVICE FOR THE CHARGING, PRESSING AND REMOVING STACKED PACKS FROM A HEAT PRESS

Richard Brussel, Sulzfeld, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,910
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825206
Int. Cl.[3] B30B *15/30, 15/32*
U.S. Cl. 156—60 4 Claims

1. A process for charging, pressing and removing laminated sheets comprising:

(a) providing a carrier sheet having a top and a bottom,

(b) placing on the top and bottom a protective sheet forming an unpressed laminate,

(c) placing the unpressed laminate on a conveying means,

(d) moving the conveying means into an open heat press, the heat press having upper and lower hot plates,

(e) moving a suction means into the open heat press,

(f) the conveying means being initially offset in height from the suction means,

(g) the suction means substantially simultaneously removing a pressed laminate from the heat press as the conveying means moves the unpressed laminate therein,

(h) moving a portion of the unpressed laminate onto the suction means while a portion remains on the conveying means,

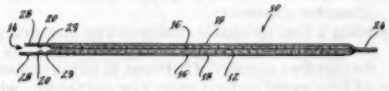
(i) placing the unpressed laminate on the lower hot plate by substantially simultaneously removing the conveying means and the suction means from the heat press.

4,253,892

METHOD AND APPARATUS FOR MAKING CUSHIONED SHIPPING BAGS

Joseph J. D'Angelo, Wycoff, N.J., and Lawrence S. Maccherone, Crystal Lake, Ill., assignors to Flexible Design Packaging Machine Company, Hawthorne, N.J.

Filed Feb. 15, 1979, Ser. No. 12,288
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—84 6 Claims



1. A method of making a cushion packet bag comprising the steps of:

providing two outer protective layers of tough, durable, flexible sheet material;

providing a heat-sealable coating on a pre-determined surface of each of said outer layers;

said heat-sealable coating having a melting temperature below the temperature at which said outer layers become damaged;

positioning said outer layers with their coated surfaces facing inwardly toward each other;

sandwiching two layers of polypropylene microfoam cushioning material between the coated inner surfaces of said outer layers;

said polypropylene microfoam material melting at a temperature below said coating;

heat-sealing the perimeter of the bag by applying heat and

pressure to predetermined regions of the exterior surfaces of the outer protective layers for feeding heat energy inwardly through said layers for burning away and rapidly shrinking back the intervening polypropylene layers for exposing said coated surfaces directly to each other and for causing the softened exposed coatings on the two outer protective layers to directly engage each other for heat sealing said outer layers directly together in face-to-face relationship;

immediately thereafter applying cold chiller members to said exterior surfaces of said outer protective layers in said predetermined regions for chilling said heat sealed regions of the outer protective layers for setting the perimeter seal; and

severing successive bags from each other by a cut line positioned in said sealed perimeter region.

4,253,893

NON-PNEUMATIC TIRE

Richard L. Clinefelter, Littleton, Colo., and Larry R. Bradford, Woodridge, Ill., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 929,399, Jul. 31, 1978. This application Oct. 3, 1979, Ser. No. 81,414

Int. Cl.³ B29H *17/02*

U.S. Cl. 156—112 **11 Claims**

10. A method for the production of reinforced endless and non-jointed solid core tires adapted to be snapped on to an associated channel-shaped rim, the finished tire having a base portion adapted to fit against the rim, and an outer tread portion, comprising:

extruding an elastomeric core having a notch extending longitudinally along an outer surface portion of the core corresponding to the tread portion of the finished tire;

wrapping a length of the core circumferentially about an endless support with the notched surface portion disposed radially outwardly, bringing opposite ends of the core into substantial abuttment;

winding a heat shrinkable strain-resisting filamentary reinforcement member in the notch circumferentially about the core for a plurality of full turns, to form a preform; and

mold forming the preform under heat and pressure whereby the reinforcement contracts radially inwardly and becomes integrally embedded adjacent the center of the cross section of the endless tire core and spaced substantially from sidewalls of the tire core.

4,253,894

DELIVERING ROVING FOR FABRICATION OF PLASTIC PIPE

Gerald M. Magarian, Long Beach, Calif., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Apr. 27, 1978, Ser. No. 900,735

Int. Cl.³ B65H *81/00*

U.S. Cl. 156—175 **19 Claims**

1. A method for manufacturing plastic pipe reinforced with rovings comprising the steps of:

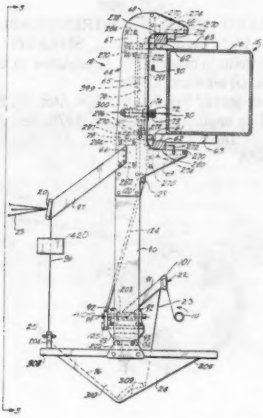
(a) wetting a plurality of rovings with liquid resin;

(b) longitudinally carrying the wetted rovings to and fro on a carriage along a mandrel rotating about its longitudinal axis;

(c) delivering the wetted rovings in a band to the rotating mandrel by sliding them over an elongated surface which moves with the carriage and which is spaced from and curved concavely away from the mandrel, the surface extending in the same general direction as the longitudinal axis of the mandrel;

(d) disposing the surface so a tangent to the surface where the centerline of the rovings passes over the surface extends toward the mandrel in the direction in which the rovings move relative to the mandrel;

(e) pivoting the surface about an axis spaced from the surface in the direction of the mandrel at least as far as the longitudinal axis of the mandrel as the rovings reverse their direction along the mandrel to shift the curved surface relative to the carriage and longitudinally relative to the mandrel axis to simultaneously tilt the surface so the tangent extends toward the mandrel in the new direction in which the rovings move relative to the mandrel and at substantially the same angle as when the rovings move in the other direction, the shifting and tilting being such that the band does not substantially shift along the surface and does not substantially widen during the carriage reversal; and



(f) helically winding the band of wetting rovings on the mandrel at a selected helix angle, wherein the combination of the longitudinal movement of the rovings and the rotation of the mandrel produces a helix.

8. A machine for manufacturing plastic pipe reinforced with rovings comprising:

(a) a mandrel upon which the pipe is formed, the mandrel rotating about its longitudinal axis;

(b) means for wetting a plurality of rovings with liquid resin;

(c) means for carrying the wetted rovings in a band to and fro along the length of the mandrel as the band of wetted rovings are helically wound at a selected helix angle on the mandrel;

(d) an elongated surface secured to the carrying means, the surface extending in the same general direction as the longitudinal axis of the mandrel and being spaced from and curved concavely away from the mandrel, and the surface being disposed so the wetted rovings pass over it and so a tangent to it where the centerline of the rovings passes over it extends toward the mandrel in the direction in which the rovings move relative to the mandrel; and

(e) means for pivoting the surface about an axis spaced from the surface in the direction of the mandrel at least as far as the longitudinal axis of the mandrel and transverse to the

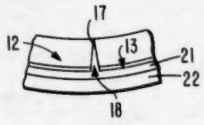
longitudinal axis of rotation of the mandrel whenever the rovings reverse their direction of longitudinal movement along the mandrel to shift the surface relative to the carrying means and longitudinally relative to the mandrel axis to simultaneously tilt the tangent to the surface toward the mandrel in the direction of longitudinal movement of the rovings in order to maintain a substantially constant angle between the long axis of the rovings and the axis of rotation of the mandrel as the rovings are wound at the selected helix angle on the mandrel, and so that the band does not substantially shift on the surface and does not substantially widen during reversal of the carriage means.

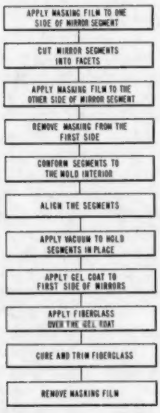
4,253,895

METHOD AND APPARATUS FOR FORMING A SEGMENTED MIRROR PARABOLIC SOLAR COLLECTOR TROUGH

David O. Chenault, Clear Lake, Iowa, assignor to Toltec Industries Inc., Clear Lake, Iowa

Filed May 4, 1979, Ser. No. 36,255
Int. Cl.[3] **B32B** *31/00;* **B31F** *23/10;* **F02M** *23/14;* **G02B** *5/08*
U.S. Cl. 156—163 **7 Claims**




APPLY MASKING FILM TO ONE SIDE OF MIRROR SEGMENT
CUT MIRROR SEGMENTS INTO FACETS
APPLY MASKING FILM TO THE OTHER SIDE OF MIRROR SEGMENT
REMOVE MASKING FROM THE FIRST SIDE
CONFORM SEGMENTS TO THE MOLD INTERIOR
ALIGN THE SEGMENTS
APPLY VACUUM TO HOLD SEGMENTS IN PLACE
APPLY GEL COAT TO FIRST SIDE OF MIRRORS
APPLY FIBERGLASS OVER THE GEL COAT
CURE AND TRIM FIBERGLASS
REMOVE MASKING FILM

1. A method for fabricating a solar collector trough comprising the steps of:

placing a first imperforate film on the silvered surface of at least one flat mirror segment,

cutting at least one mirror segment into a plurality of facets,

placing a second imperforate masking film on the glass surface of the faceted mirror,

removing the first masking film,

aligning and conforming the faceted mirror and masking film to the curved surface of an apertured mold, whereby adjacent facets contact one another along their respective surfaces which are adjacent to the second masking film,

forcing the contacting surfaces of the individual facets into lateral compression on the mold surface,

coating the unmasked and uncompressed surfaces of the mirror segment with a hardenable gel coat material,

allowing the hardenable gel coat material to cure, releasing the lateral compression force, and

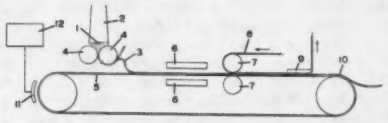
removing the second masking film.

4,253,896

METHOD OF MAINTAINING KEY BETWEEN SILICONE BELT AND VINYL RESIN BLANKET BY APPLYING A CORONA DISCHARGE TO THE BELT

Francis J. Appleyard, East Petersburg, and George E. Bagley, Lancaster, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed May 10, 1979, Ser. No. 37,712
Int. Cl.[3] **B29C** *19/02;* **B32B** *31/00;* **C07C** *3/24*
U.S. Cl. 156—231 **5 Claims**



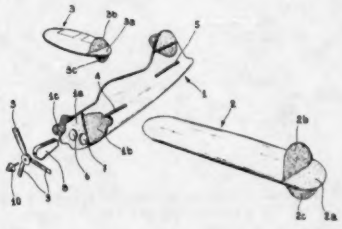
1. In the manufacture of decorative plastic tile by forming a decorative or plain vinyl resin blanket, depositing said blanket on a carrier belt, printing said blanket on said belt by pressing a transfer printing sheet against one face of said blanket, removing said transfer sheet from said blanket, and cutting the printed blanket into tiles, the improved method of maintaining adherence of said blanket to said belt while removing said transfer sheet comprising, depositing said blanket on a carrier belt consisting of a reinforced silicone rubber belt, and applying a corona discharge to the surface of said belt at atmospheric pressure prior to the application of the blanket, whereby the surface characteristics of said belt are altered to maintain adherence of said blanket to said belt during transfer sheet removal.

4,253,897

PROCESS FOR CREATING PLAYTHINGS, PARTICULARLY THOSE THAT FLY, AND A TOY MADE WITH THE SAID PROCESS

Marco M. Pistone, Solarolo, Italy, assignor to Cartografica Santerno S.p.A., Bologna, Italy

Filed May 9, 1979, Ser. No. 37,271
Claims priority, application Italy, May 31, 1978, 3456 A/78
Int. Cl.[3] **B32B** *31/00;* **A63H** *27/00, 13/20;* **A63F** *9/02*
U.S. Cl. 156—256 **3 Claims**



1. Method for constructing a flying toy comprising the steps of:

(a) punching from extruded polystyrene at least one member of limited thickness and of a suitable shape for said toy having a central body portion;

(b) forming a hole in said central body portion member and inserting a weight therein, the location, size and gauge of said weight being calculated to contribute towards the dynamic balance of said toy; and

(c) fixing a pair of facing members to both sides of said one member having a shape and outline corresponding to that of said one member, whereby the latter is fully covered including said weight.

4,253,898

BONDING COMPOSITION AND MICROWAVE PROCESS FOR BONDING TOGETHER PLASTIC COMPONENTS

William R. Rinker, Cuyahoga Falls, and Richard S. Varga, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 17, 1979, Ser. No. 92,011
Int. Cl.[3] B29C *19/02*
U.S. Cl. 156—272 3 Claims

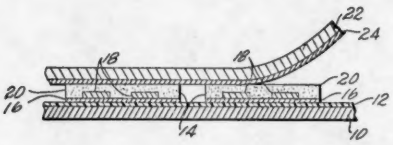
1. The process for bonding together vinyl chloride or vinylidene chloride polymer components which comprises interposing between the said vinyl polymer components to be bonded together and in contact with opposing surfaces of the said vinyl polymer components a bonding composition comprising (a) a colloidal dispersion of a vinyl chloride polymer resin or a vinylidene chloride polymer resin or a mixture of vinyl chloride and vinylidene polymer resins having at least 50 percent by weight of vinyl chloride or vinylidene chloride in from about 25 to 200 parts by weight per 100 parts by weight of said vinyl polymer of a liquid plasticizer for said vinyl polymer and (b) from 10 to 100 parts by weight per 100 parts by weight of said vinyl polymer of a polar material having a dielectric constant above 35 at 20° C., subjecting said vinyl polymer components to be bonded together with said bonding composition interposed between and in contact with said vinyl polymer components to electromagnetic energy having a wave length between about 0.001 to 0.3 meter for about ¼ minute to about 5 minutes to heat the said bonding composition to a temperature at which fusion of the colloidal dispersion occurs and at which the surfaces of the said vinyl polymer components in contact with the bonding composition softens, and cooling the resulting structure to a temperature below the softening temperature of the fused bonding composition and the said plastic components.

4,253,899

METHOD OF MAKING MATRIX FREE THIN LABELS

Shiro G. Takemoto, Glendora, and Yukihiko Sasaki, Claremont, both of Calif., assignors to Avery International Corporation, San Marino, Calif.

Division of Ser. No. 849,325, Nov. 7, 1977. This application Mar. 8, 1979, Ser. No. 18,576
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—277 22 Claims



1. A method of forming discrete labels on a temporary carrier web having a release surface which comprises:

forming discrete label face films releasably adhered to the release surface of the carrier web and comprising at least one layer of radiation-cured polymer by coating discrete areas on the release surface corresponding to labels being formed with at least one layer of radiation-curable liquid and curing the liquid by exposure to polymerizing radiation;

applying pressure-sensitive adhesive in liquid form over the discrete label face films substantially in register with the label face films;

solidifying the liquid adhesive to form discrete labels, each label having a face film releasably adhered to the release surface of the carrier web and a layer of pressure-sensitive adhesive on the side of the label opposite the carrier web; and

covering the pressure-sensitive adhesive with a protective backing have a release surface in contact with the adhesive, the adhesion between the adhesive and the release surface of the backing being weaker than the adhesion between the face film and the release surface of the carrier web, whereby the protective backing can be removed from such a label to expose the layer of adhesive while leaving the label releasably adhered to the carrier web.

4,253,900

METHOD OF MAKING NOVEL TWO COMPONENT BIPOLAR ION EXCHANGE MEMBRANES

Gerald J. Dege, Flanders; Frederick P. Chlanda, Rockaway; Lester T. C. Lee, Parsippany, and Kang-Jen Liu, Sommerville, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 28, 1977, Ser. No. 772,786
Int. Cl.[3] C09J *5/02*
U.S. Cl. 156—309.3 11 Claims

1. A process for manufacturing a high performance composite bipolar membrane which comprises substantially uniformly impregnating one side of (a) a component polymeric strongly acidic cationic exchange membrane consisting essentially of a polystyrene-divinylbenzene-polyolefin composition wherein the polystyrene content of the component strongly acidic cationic membrane ranges from 15 to 50 percent by weight and wherein the cross-linking content of the component strongly acidic cationic membrane is equivalent to that produced by a divinylbenzene-styrene swelling solution containing from 1 to 20 weight percent of divinylbenzene and chemically treating the polystyrene-divinylbenzene-polyolefin composition such that the aromatic nuclei in the composition are chemically functionalized with strongly acidic cationic exchange groups and one side of (b) a component polymeric strongly basic anionic exchange membrane consisting essentially of a polystyrene-divinylbenzene-polyolefin composition wherein the polystyrene content of the component strongly basic anionic membrane ranges from 15 to 50 percent by weight and wherein the cross-linking content of the component strongly basic anionic membrane is equivalent to that produced by a divinylbenzene-styrene swelling solution containing from 1 to 20 weight percent of divinylbenzene and chemically treating the polystyrene-divinylbenzene-polyolefin composition such that the aromatic nuclei in the composition are chemically functionalized with strongly basic anionic exchange groups with (c) a strongly basic anionic or strongly acidic cationic ion exchange resin or a mixture thereof, and having a resin particle size not greater than about 40 microns, dispersed in (d) an organic solvent liquid which is at least a partial solvent for said component membranes (a) and (b) and at least a partial solvent for said ion exchange resin (c), sandwiching said ion exchange resin between said component membranes and fusing said component membranes to form a unitary composite bipolar membrane having a potential drop of no more than about 2 volts at a current density of 72 amp/ft^2.

4,253,901

METHOD OF HEAT SEALING EMPLOYING A HOT TACK ADHESIVE

R. Corbin Aslakson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 1, 1977, Ser. No. 812,090
Int. Cl.[3] C09J *5/06*
U.S. Cl. 156—327 4 Claims

1. In a method of forming a seal or bond between facing substrate surfaces having a heat-activatable thermoplastic adhesive material therebetween by applying pressure sufficient to maintain intimate contact between the adhesive material and the substrate surfaces and heating to a temperature in the heat-seal range to activate the thermoplastic adhesive material in the area to be sealed or bonded, wherein the resulting seal or bond is subjected to force tending to separate the substrate

surfaces while the adhesive material therebetween is at a temperature in the heat-seal range,

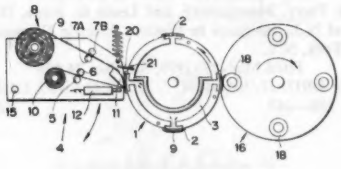
the improvement wherein the heat-activatable thermoplastic adhesive material is composed essentially of a copolymer of ethylene and at least one acid selected from acrylic acid and methacrylic acid, which copolymer contains from about 6 to about 10 weight percent of said acid based on the copolymer and has melt flow value in the range from about 1 to about 3 dg/min., whereby the resulting seal or bond has high hot tack strength.

4,253,902

AUTOMATIC LABELER

Kazuaki Yada, Tokyo, Japan, assignor to Sansei Seiki Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1980, Ser. No. 162,564
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—361 **4 Claims**



1. An automatic labeler comprising:

(1) a label peeling-applying unit including a rotary drum having at least one label-sucking slit at the periphery thereof, vacuum being applied to the label-sucking slit when it receives a label from a mounted label feeding reel and the vacuum being released from the label-sucking slit when the thus received label is applied to an article,

(2) a mounted label feeding unit including (i) a support plate provided at its forward end with (ii) a peeling means at which a mounted label from the mounted label feeding reel is bent to peel the tip of the label from the mount, the support plate being capable of being pivotally rotated so that the forward end thereof may, after sucking of the tip of the label onto the sucking slit of the rotary drum, arcuately move at the same peripheral velocity in the same direction as the rotary drum over such a distance as to peel the whole of the label from the mount and soon thereafter it may return to its original position for repeating the same peeling operation as above, (iii) a means for passing mounted labels towards the forward end of the support plate, (iv) a means for passing the label-peeled mount to a take-up reel and (v) a photoelectric detector sending a signal to stop the driving roll for a time required to peel the whole of the label from the mount, the signal being sent when the photoelectric detector detects the peeling of the tip of the label from the mount by bending the mounted label at the peeling blade, and

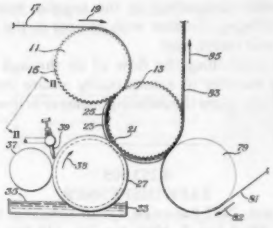
(3) a conveyor unit so positioned that the label sucked onto the label-sucking slit of the rotary drum may contact with a to-be-labeled article on the conveyor to apply said label to the article while the label and the article are moving at the same velocity in the same direction, thereby ensuring satisfactory labeling without causing creases and swells in the applied label.

4,253,903

CORRUGATING MACHINE WITH AIR PRESSURE CLEANING DEVICE FOR GLUE ROLLER GROOVES

William V. McDonald, Fort Worth, Tex., assignor to Bates Container Corporation, Fort Worth, Tex., a part interest

Filed Oct. 9, 1979, Ser. No. 82,784
Int. Cl.³ B05C *1/00*; B31F *1/20*
U.S. Cl. 156—389 **6 Claims**



1. An apparatus for removing glue from circumferential grooves of a glue roller in a machine for making corrugated paper, comprising:

a plurality of nozzles mounted adjacent the glue rollers, each pointing into one of the grooves; and

air pressure means for supplying air to the nozzles to remove glue from the grooves, the air pressure means comprising:

a manifold connected to a source of air pressure, each nozzle being connected to the manifold, and wherein the apparatus further comprises;

a needle for each nozzle reciprocally carried by the manifold between an upper and lower position, the needle being positioned and being of length for protruding through the nozzle when in the lower position to clean the tube; and

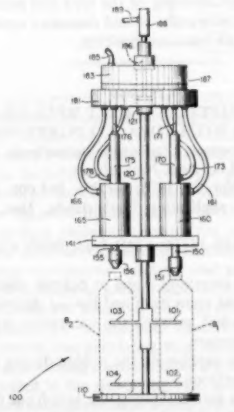
a plunger secured to the upper end of each needle and extending sealingly out of the manifold for enabling the needles to be manually reciprocated to clean the nozzles.

4,253,904

HIGH SPEED DECORATOR

Robert M. Jodrey, Westboro, and Kenneth Young, Groton, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 12, 1978, Ser. No. 915,025
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—497 **7 Claims**



1. An improved turret for holding N articles to be labeled,

where N is greater than or equal to 1, said turret including article holding means and means for rotating the turret to deliver articles to and away from a labeling site, wherein the improvement comprises apparatus for inflating these articles during labeling comprising:

N article inflating members;

means for raising and lowering the article inflating members, comprising a N-manifold assembly which provides either a raising signal or a lowering signal to each article inflating member depending on the angular position of said article inflating member with respect to the axis of rotation of said turret; and

means for controlling the flow of air through each article inflating member to automatically ensure that such flow occurs only when the inflating member is lowered into an article.

4,253,905

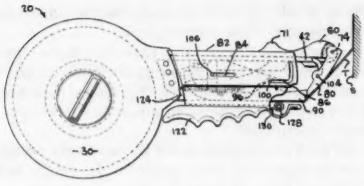
TAPE DISPENSER

James L. Regan, 2027 Lakeview Ter., Fairbanks, Ak. 99701

Filed Jan. 7, 1980, Ser. No. 110,226

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—523 **16 Claims**



1. A hand-held tape dispenser comprising a main frame, a tape roll of pressure-sensitive tape having adhesive means on one side supported on said main frame, a pivotal tape positioning and severing cutter edge positioned outwardly of said roll of pressure-sensitive tape, cutter edge moving means for moving said cutter edge between a retracted position and an extended tape positioning and severing position, tape guide means for guiding tape being dispensed from the roll outwardly beyond the cutting edge and actuator means operable at the completion of said tape dispensing operation firstly for clamping the tape against the tape guide means and secondly for rapidly moving said tape guide means to a second position spaced inwardly of said tape cutter edge when said tape cutter edge is in its extended position to tension the tape against the cutter edge to effect severing of the tape and provide a tape end tab extending outwardly of said dispenser upon return of the cutter edge to its retracted position.

4,253,906

DEVICE FOR EMPTYING A BELT REEL OR BOBBIN FILLED WITH TOBACCO PORTIONS

Wilhelmus P. L. Boogers, Eindhoven, Netherlands, assignor to B.V. Arenco P.M.B., Best, Netherlands

Filed Nov. 29, 1978, Ser. No. 964,606

Claims priority, application Netherlands, Dec. 19, 1977, 7714082

Int. Cl.³ B32B *31/16;* A24B *3/16;* B65G *47/22*

U.S. Cl. 156—584 **10 Claims**

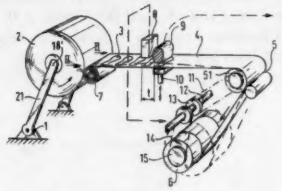
1. Apparatus for emptying a reel or bobbin which is in the form of a belt wound upon itself and having discrete portions of tobacco sandwiched between the successive layers of the bobbin, which comprises:

support means for supporting the bobbin during unwinding of the belt therefrom;

unwinding means for unwinding the belt from the bobbin, said unwinding means being spaced from said support means whereby a length of belt is disposed therebetween and upon one surface of which discrete portions of tobacco are exposed;

brake means for causing said length of belt to be tensioned under the action of said unwinding means;

removal means disposed adjacent said one surface of the



length of belt for successively removing the discrete portions of tobacco therefrom; and

means for altering the tension of said length of belt when a discrete portion of tobacco is registered with said removal means, the tension of the belt being altered sufficiently to assure loosening of the tobacco from said one surface.

4,253,907

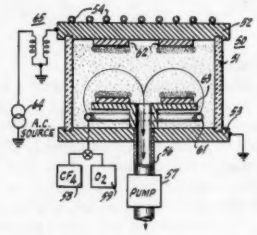
ANISOTROPIC PLASMA ETCHING

Peter D. Parry, Montgomery, and Leslie G. Jerde, Hopewell, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 28, 1979, Ser. No. 24,805

Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/02*

U.S. Cl. 156—643 **32 Claims**



13. A method of anisotropically etching a workpiece, said workpiece being positioned within an evacuated reaction chamber, the method comprising the steps of:

creating a gaseous plasma in said reaction chamber by the excitation of at least one etchant gas, said plasma having a volume power density less than 0.01 W/cm^3 and said excitation being effected by the application of an alternating electric field to said etchant gas, said alternating field having a frequency which is greater than 0 Hz but less than 300 KHz; and then

exposing said workpiece to said gaseous plasma for a predetermined time interval at a reaction chamber pressure of less than one torr.

4,253,908

FORMING DECORATED ARTICLES

Paul Stephen-Daly, Unit 3, 3 Belmont Ave., Glen Iris, 3146 Victoria, Australia

Filed Jul. 19, 1979, Ser. No. 59,048

Claims priority, application Australia, Sep. 21, 1978, 40071/78

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—645 **4 Claims**

1. A method of producing decorated shaped articles from

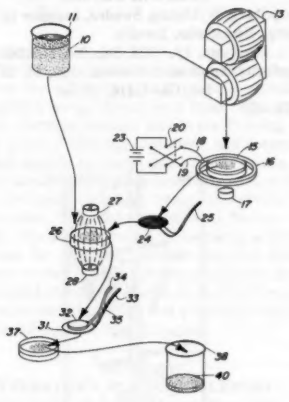
sheet metal comprising the steps of applying a decorative pattern to a clean sheet of said metal using a high temperature resistant synthetic rubber material as an etch resistant coating, spinning the metal sheet into a desired shape, said high temperature resistant synthetic rubber etch resistant coating withstanding the high temperature generated by the spinning step and thereby maintaining the decorative pattern intact, etching the shaped material to partially remove the metal in the regions not coated by said etch resistant material, cleaning the etched article, and removing said coating material from the article.

4,253,909

SURFACE TREATING A PORTION OF SMALL ARTICLES

Lawrence L. Lee, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Co., Fort Wayne, Ind.

Filed Apr. 12, 1976, Ser. No. 675,859
Int. Cl.³ B44C 1/22
U.S. Cl. 156—654 **18 Claims**



1. A method for coating only a portion of a plurality of substantially spherical particles to provide a sharp delineation between the coated and uncoated portion of the particle, comprising: sprinkling a plurality of substantially spherical particles onto a surface of a coating solution, the coating solution supporting the particles substantially by adjustable surface tension to prevent the particles from becoming fully submerged in the coating solution; and removing the particles from the coating solution, the particles being coated only on the portion of the particle in contact with the coating solution.

16. A method of etching only a portion of a colored article so that the etched portion appears of a different color than a portion that is not etched, comprising: supporting the particle on a surface of a fluid-liquid interface so that only a portion of the particle is in contact with an etching solution, the supporting being accomplished by adjustable surface tension of the fluid-liquid interface and assisted by buoyancy of the article; and removing the article from the fluid-liquid interface after the etching has been completed.

4,253,910

ORNAMENTAL MIRROR AND APPARATUS AND METHOD FOR MAKING SAME

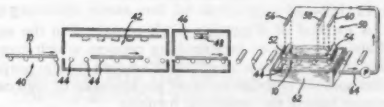
Robert C. Mason, High Springs, Fla., and Joseph Scerbo, Bayshore, N.Y., assignors to Colonial Mirror & Glass Corp., Brooklyn, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,409
Int. Cl.³ B44C 1/22
U.S. Cl. 156—633 **3 Claims**

1. A method of making a mirror with a reflective layer having at least one transparent design portion and having a backing with corresponding discrete design portions juxtaposed thereto comprising:

transposing a discrete design from a backing article to a silkscreen;

transposing said design from said silkscreen to a unit of glass, having a reflective backing and being correspondingly sized to said desired backing, by superimposing said silkscreen upon said reflective backing and applying a protective resist substance through said silkscreen to areas of said reflective layer not underlying said discrete design portion of said silkscreen;



removing, by means of a washing agent, portions of said reflective layer not protected by said resist substance; and

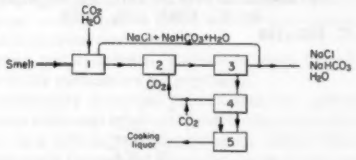
applying said backing over said protective resist layer, said transparent design portion of said unit of said mirror and said discrete design portions of said backing being juxtaposed, wherein, subsequent to the application of said protective resist layer, said coated glass is heated to set said protective resist substance, is then slightly cooled in a controlled manner prior to application of said washing agent.

4,253,911

PROCESS FOR MAINTAINING A LOW SODIUM CHLORIDE CONTENT IN RECYCLED SODIUM CHEMICALS OF SODIUM-BASED PULP MANUFACTURING PROCESSES

Per A. R. Hillstrom, Domsjo, and Kent I. Sondell, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Feb. 24, 1977, Ser. No. 771,705
Claims priority, application Sweden, Nov. 15, 1976, 7612743
Int. Cl.³ D21C 11/02, 11/04
U.S. Cl. 162—30 R **9 Claims**



1. In the cyclic process for the recovery of sodium chemicals in sodium-based pulp manufacturing process, which comprises the steps of combusting a sodium-chemical-containing waste liquor to form a sodium-chemical-containing smelt containing sodium salts including sodium chloride present in the waste liquor or derived therefrom during combustion; dissolving the smelt in an aqueous mother liquor to dissolve sodium salts including sodium chloride; treating the resulting solution of sodium salts with carbon dioxide gas, thereby forming a saturated sodium bicarbonate solution, and precipitating sodium values of the solution as sodium bicarbonate while maintaining sodium chloride in solution; and separating and recycling sodium bicarbonate to the pulp manufacturing process and mother liquor to the dissolving step, the improvement which comprises maintaining a sodium chloride content in the mother liquor recycled to the dissolving step below about 200 g per liter at which sodium chloride would precipitate during carbon dioxide treatment, by withdrawing from the cyclic process a portion of the sodium chloride-containing mother liquor after

removal of sodium bicarbonate, and recycling the remainder of the sodium-containing mother liquor to the dissolving step.

4,253,912

DEPOSIT CONTROL THROUGH THE USE OF OLIGOMERIC PHOSPHONIC ACID DERIVATIVES

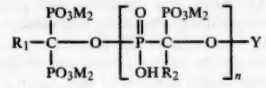
Larry W. Becker, Wilmington, Del.; Philip S. Davis, Furlong, Pa., and Ian D. Morrison, Webster, N.Y., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 941,536, Sep. 11, 1978, Pat. No. 4,201,669. This application Jul. 16, 1979, Ser. No. 57,629

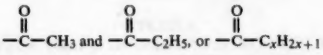
Int. Cl.³ D21C *9/00*

U.S. Cl. 162—76 **3 Claims**

1. A method of dispersing pitch contained in the aqueous medium of a pulp or papermaking process which comprises adding to said medium an effective amount for the purpose of a water soluble, chlorine-resistant phosphonate of high calcium tolerance having the structural formula



where R_1 and R_2 represent a mixture of $-CH_3$ and $-C_2H_5$ or where R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; where x is from 2 to and including 13; Y is hydrogen, a mixture of



wherein x is as earlier defined; M is a water soluble cation; and n is 1 or greater.

4,253,913

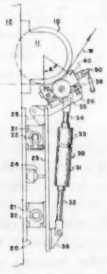
METHOD FOR DETERMINING THE SURFACE ABRASIVENESS OF A PAPER MACHINE WEB

Partha S. Chaudhuri, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 924,949, Jul. 17, 1978, Pat. No. 4,169,756. This application May 24, 1979, Ser. No. 41,988

Int. Cl.³ G01N *3/56, 19/02*

U.S. Cl. 162—198 **3 Claims**



1. A method of determining the surface abrasiveness of a papermachine web comprising the steps of:

A. Passing said web over an arcuate portion of a rotating web turning roll surface secured to a papermachine support frame;

B. Weighing a sheet specimen of sacrificial material.

C. Securing said specimen to a pressure shoe pivotally mounted to said support frame;

D. Contacting said papermachine web along one lateral edge thereof with said weighed specimen within a substantially dry web zone in said papermachine radially opposite from said rotating web turning roll surface by pivoting the pressure shoe toward the turning roll wherein one sheet face of said specimen is concentrically arced with said turning roll and radially pressed against said web with a regulated bearing pressure;

E. Running an incremental length of said web in contact with said specimen;

F. Measuring the length of said web increment simultaneous with the running thereof;

G. Disengaging said specimen from contact with said web at the end of said measured web increment; and,

H. Weighing said disengaged specimen to determine the quantity of sacrificial material removed from said specimen per unit of web length.

4,253,914

FEEDING DEVICE

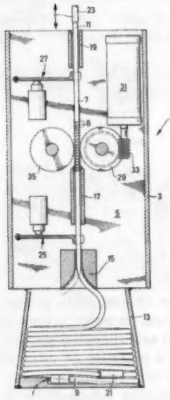
Bengt I. Fogelberg, Nyköping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed Jan. 13, 1978, Ser. No. 869,266

Claims priority, application Sweden, Jan. 14, 1977, 7700389

Int. Cl.² G21C *17/00*

U.S. Cl. 176—87 **5 Claims**



1. Device for insertion and withdrawal of an electrically connected instrument in a deep channel, comprising a relatively rigid cable-like member, one end of said member to be inserted being connected to the instrument and the other end of said member being permanently fixed and permanently electrically connected, and means for inserting said member and the associated instrument into said deep channel, characterized by a collecting container open towards the channel, said container having a continuous conical taper of at least 5° towards the open end whereby said member can be deposited in the form of a closely packed helix when withdrawing the instrument from the channel, and a feeding means for insertion into and withdrawal from the channel of said cable-like member, said feeding means being arranged in such a manner as to permit rotation of the cable-like member during the feeding thereof in view of the permanent attachment of its said other end, and wherein said other end of the cable-like member is circumferentially attached to the collecting container at an end remote from said open end in such a manner that the superposed feeding resulting from the rotation of the cable-like member is added to the principal feeding, whereby torsional stresses in the cable-like member in the area adjacent to the part of the cable-like member deposited in the collecting container are avoided.

4,253,915
PRESSURE ROD FOR A COKE DISCHARGE APPARATUS

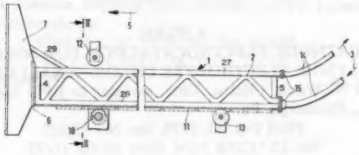
Walter Goossens, Wuerselen-Bardenberg, and Wolfgang Schrank, Aldenhoven, both of Fed. Rep. of Germany, assignors to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,863

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827882

Int. Cl.³ C10B *33/10*

U.S. Cl. 202—262 **7 Claims**



1. A pressure rod for a coke discharge apparatus, comprising a plurality of hollow, sectional members operatively interconnected to form the rod proper, said interconnected, hollow, sectional members being closed in a fluid tight manner for simultaneously forming passage means for flowing a coolant through said hollow, sectional members, and means for connecting coolant supply means to said passage means, said hollow, sectional members forming a hollow truss structure, all of said hollow, sectional members being operatively interconnected for coolant flow through all said hollow, sectional members, said connecting means comprising a first flexible coolant conduit for supplying coolant into said hollow truss structure and a second flexible coolant conduit for discharging coolant from said hollow truss structure, said hollow, interconnected truss structure providing a substantially uniform coolant supply throughout the truss structure.

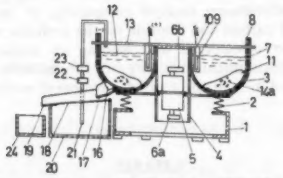
4,253,916
VIBRATORY PLATING METHOD

Hisamine Kobayashi, Nagoya; Motoo Kawasaki, Hirakata; Shozo Mizumoto, Takarazuka; Hidemi Nawafune, Takatsuki, and Sadamasa Suzuki, Tatsuta, all of Japan, assignors to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan

Division of Ser. No. 16,144, Feb. 28, 1979. This application Sep. 19, 1979, Ser. No. 76,951

Int. Cl.³ C25D *5/00, 17/18*

U.S. Cl. 204—14 R **13 Claims**



1. A method of plating workpieces in a plating container comprising:

providing a base and a vibratory plating container means resiliently mounted on the base, the container means having a lid covering the top and having a bottom with a concavely arcuate cross-section;

filling the container means with individual workpieces to be plated and a plating liquid;

vibrating the container means with a provided vibration generating means connected between the base and vibratory plating container means, the vibration causing workpieces in the container means to roll and to be transferred in a direction along the container means parallel to the bottom thereof;

generating an electric field through the plating liquid with electrodes of opposite polarities provided within the container means;

discharging a mixture of plated workpieces and plating liquid through a discharge port provided on one side of the arcuate bottom of the container means;

receiving the mixture from the discharge port and separating the workpieces from the plating liquid with a screening means provided below and separate from the container means; and

returning the separated plating liquid to the container means with a provided liquid return means connected between the container means and the screening means.

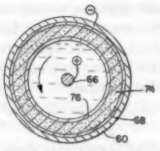
4,253,917
METHOD FOR THE PRODUCTION OF COPPER-BORON CARBIDE COMPOSITE

Chih-Chang Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,263

Int. Cl.³ C25D *15/00, 7/04*

U.S. Cl. 204—16 **15 Claims**



1. A process for producing a solid cylindrical composite having a wall containing a middle layer of boron carbide-filled copper within it, comprising the steps of:

(a) providing a cylindrical metal-conductive substrate electrically connected as a cathode;

(b) providing a copper anode coaxially within the cylindrical substrate;

(c) filling the cylinder with an electrolyte suitable for plating copper;

(d) depositing a layer of electrically nonconductive particles of boron carbide on the inner wall of said electrically conductive cylindrical substrate;

(e) rotating said cylindrical substrate to apply centrifugal force to the particles on the substrate;

(f) electrolytically depositing copper onto said cylindrical substrate while said substrate is electrically connected to a circuit as a cathode by flowing electric current from the copper anode through the electrolyte to the substrate, said centrifugal force being applied to hold the particles on the substrate during deposition and aid the deposition of copper until a layer of boron carbide-filled copper of a desired thickness is achieved; and,

(g) continuing the deposition of copper over the layer of boron carbide-filled copper to form an inner layer of copper on the cylindrical composite.

4,253,918
AIR-DRYING COATING COMPOSITIONS

Hans-Joachim Traenckner; Hans J. Rosenkranz, and Hans Rudolph, Krefeld, all of Fed. Rep. of Germany, assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 16, 1975, Ser. No. 586,886

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1974, 2429527

Int. Cl.³ C08F *2/46*

U.S. Cl. 204—159.22 **13 Claims**

1. An air-drying coating composition hardenable by UV-

light comprising the product of reaction, at a temperature of 20° to 90° C. and in the presence of 0.001 to 0.1% by weight, based on the total compositions, of a polymerization inhibitor, of a polyepoxide with 0.01 to 0.5 NH-equivalents, based on the epoxide equivalent, of at least one nitrogen compound selected from the group consisting of ammonia, and aliphatic and cycloaliphatic primary and secondary amines, which intermediate product has subsequently been reacted with 0.99 to 0.5 carboxyl equivalents, based on one epoxide equivalent, of at least one member selected from the group consisting of acrylic acid and methacrylic acid, at least 60% of the epoxide groups of said polyepoxide having been so reacted.

4,253,919

ELECTRODEPOSITION OF CADMIUM-SELENIUM SEMICONDUCTING PHOTOELECTRODES FROM AN ACID CITRATE BATH

Dale E. Hall, Monroe, and William D. K. Clark, Warwick, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,045
Int. Cl.³ C25D *9/08, 3/02*
U.S. Cl. 204—37 R **22 Claims**

1. A process for codepositing cadmium-selenium onto a cathodic substrate, the process which comprises placing the cathodic substrate into an acid citrate bath, introducing cadmium and selenium ions into the bath, and passing an electric current through the bath so as to plate the cadmium and selenium onto the cathodic substrate.

4,253,920

COMPOSITION AND METHOD FOR GOLD PLATING

Augustus Fletcher, Bristol, and William L. Moriarty, South Meriden, both of Conn., assignors to American Chemical & Refining Company, Incorporated, Waterbury, Conn.

Filed Mar. 20, 1980, Ser. No. 132,279
Int. Cl.³ C25D *3/48, 3/62*
U.S. Cl. 204—43 G **17 Claims**

1. A gold plating bath comprising an aqueous solution of:

A. 15–150 grams per liter of a phosphate electrolyte;

B. 15–150 grams per liter of 1-hydroxyethylidene-1,1-diphosphonic acid;

C. a metal constitutent selected from the group consisting of (i) the 1-hydroxyethylidene-1,1-diphosphonic acid chelates of nickel and cobalt, and (ii) soluble compounds of indium, arsenic, and thallium, and (iii) mixtures thereof, said constituent providing 0.002–10.0 grams per liter of metal calculated as the metal;

D. alkali metal gold cyanide in an amount providing 1–41 grams per liter of gold calculated as the metal; and

E. free alkali metal cyanide in an amount equal to at least 2.5 percent by weight of the gold metal and sufficient to prevent precipitation of the metal values,

said solution having a pH of 3.0–13.0 and a specific gravity of 4°–30° Baume.

4,253,921

ELECTROCHEMICAL SYNTHESIS OF BUTANE-1,4-DIOL

Maynard M. Baldwin, Columbus; Robert E. Wyant, Delaware, and Luther E. Vaaler, Columbus, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Mar. 10, 1980, Ser. No. 128,817
Int. Cl.³ C25B *3/10, 3/04*
U.S. Cl. 204—72 **34 Claims**

1. A method for electrochemically preparing an α-,ω-dihydroxy-terminated alkane from a polymethylene halohydrin which comprises:

establishing in an electrolytic cell an aqueous electrolytic bath comprising water, an electrolyte, an adequate proportion of a base to establish a pH in said bath not substantially below 7, and said polymethylene halohydrin where said halogen substituent is bromine or iodine and said polymethylene substituent contains between about 2 and 6 methylene groups, said cell having an anode and a cathode disposed in said bath, said cathode being copper, silver, nickel, or zinc;

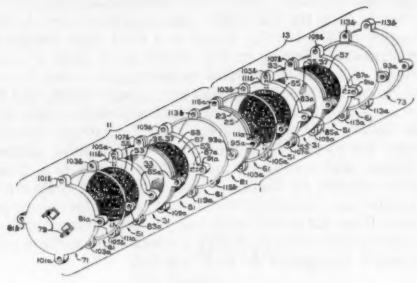
impressing an electric potential between said anode and said cathode to generate a current through said bath to cathodically couple the electrolyed polymethylene halohydrin to form said dihydroxy-terminated alkane, said pH of said bath being maintained not substantially below 7 during said potential impressing.

4,253,922

CATHODE ELECTROCATALYSTS FOR SOLID POLYMER ELECTROLYTE CHLOR-ALKALI CELLS

Cletus N. Welch, Clinton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 23, 1979, Ser. No. 15,527
Int. Cl.³ C25B *1/34, 9/00, 13/02, 11/12*
U.S. Cl. 204—98 **11 Claims**



1. In a method of electrolysis comprising feeding an aqueous alkali metal chloride brine to an electrolytic cell having an anolyte compartment separated from a catholyte compartment by a solid polymer electrolyte, said solid polymer electrolyte having an anodic electro-catalyst facing the anolyte compartment and a cathodic electrocatalyst facing the catholyte compartment; imposing an electrical potential across the solid polymer electrolyte; and withdrawing clorine from the anolyte compartment and alkali metal hydroxide from the catholyte compartment; the improvement comprising providing a cathode depolarization catalyst comprising an intercalation compound of carbon and fluorine on the cathodic side of the solid polymer electrolyte, and feeding an oxidant to said catholyte compartment whereby to substantially eliminate hydrogen evolution at the cathodic hydroxyl evolution catalyst.

4,253,923

ELECTROLYTIC PROCESS FOR PRODUCING POTASSIUM HYDROXIDE

Richard W. Lynch, Chattanooga; Garland E. Hilliard, and Ronald L. Dotson, both of Cleveland, all of Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 1, 1979, Ser. No. 44,749
Int. Cl.³ C25B *1/34, 1/02, 13/02, 13/08*
U.S. Cl. 204—98 **23 Claims**

22. In a process for the preparation of potassium hydroxide, chlorine and hydrogen in an electrolytic cell by electrolysis of potassium chloride brine, said cell having an anolyte chamber containing an anode and a catholyte chamber containing a cathode and wherein said anolyte chamber is separated from said catholyte chamber by a cationic permselective membrane, the improvement which comprises employing as said mem-

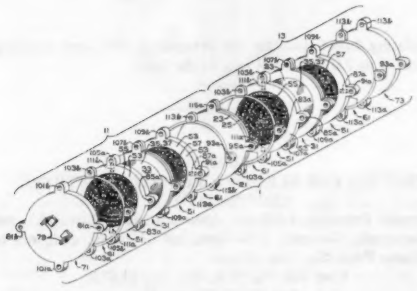
brane a perfluorosulfonic acid membrane modified on one side with an amine and having the unmodified side laminated to a fabric of polytetrafluoroethylene and rayon wherein the concentration of potassium hydroxide is in the range from about 300 to about 500 grams per liter.

4,253,924

SOLID POLYMER ELECTROLYTE CHLOR-ALKALI PROCESS

Harlan B. Johnson, Rittman, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 26, 1979, Ser. No. 88,695
Int. Cl.[3] C25B *1/34, 13/02, 13/08*
U.S. Cl. 204—98 **2 Claims**



1. In a method of conducting electrolysis is an electrolytic cell having an anode in an anolyte compartment separated from a cathode in a catholyte compartment by a permionic membrane, said cathode contacting said permionic membrane in solid polymer electrolyte configuration, which method comprises feeding alkali metal chloride brine to anolyte compartment, passing an electrical current from the anode to the cathode, and forming chlorine at the anode, the improvement wherein said anode is spaced from the permionic membrane, said cathode is bonded to the permionic membrane and the permionic membrane is a fluorocarbon resin having the moieties:

$$+CF_2—XX'+$$

and

$$+CF_2—CXY+$$

where:

X is chosen from the group consisting of —F, —Cl, —H, and —CF;

X′ is chosen from the group consisting of —F, —Cl, —H, $—CF_3$, and $—(FC_2)m\ CF$, where m is an integer from 1 to 6;

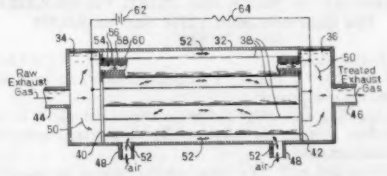
Y is chosen from the group consisting of —A, —ϕ A, —P—A, and $—O—(CF_2)_n—(P,Q,R)—A$, where P is $(CF_2)_a(CXX')_b\ (CF)_2$, Q is $(—CF_2—O—CXX')_d$ and R is $(—CXX'—O—CF_2)e$, (P,Q,R) is or contains at least one of P,Q, or R; n is 0 or 1; a,b,c,d, and e are integers from 0 to 6; ϕ is a phenylene group and A is chosen from the group consisting of —COOH, —CN, —COF, COCL, COOR, —COOM, $—CONR_2R_3$, $—PO_3H$, $—PO_3H_2$ and PO_2H_2 where R_1 is a C_1 to C_{10} alkyl group and R_2 and R_3 are chosen from the group consisting of —H, and C_1 to C_{10} alkyl groups and m is chosen from the group consisting of —H and alkali metals.

4,253,925

METHOD AND APPARATUS FOR CATALYTIC DISSOCIATION OF NO

David M. Mason, Los Altos, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Oct. 22, 1979, Ser. No. 86,635
Int. Cl.[3] C25B *1/02, 9/00*
U.S. Cl. 204—129 **14 Claims**



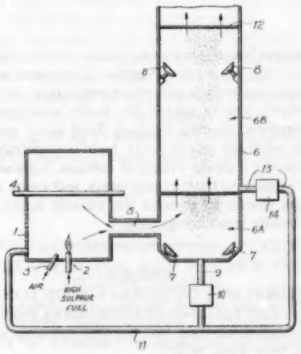
1. In a method of catalytic dissociation of NO comprising dissociating said NO at the cathodic face of a solid non-porous stabilized oxygen-ion oxide electrolyte provided with porous cathodic and anodic electrodes at opposite faces at a temperature of from 400° to 1000° C., the anodic face of which electrolyte is exposed to air, the improvement comprising connecting said electrodes to a d-c voltage source through current limiting resistor means for impressing a unidirectional electric field through said electrolyte to provide F-centers at the cathodic face of the electrolyte for enhanced catalytic action thereat, ionic oxygen flow through said electrolyte being limited by said current limiting resistor means to a level wherein oxygen transferred through said electrolyte as oxygen ions constitutes a minor portion of the total amount of oxygen produced by dissociation of NO at the cathodic surface.

4,253,926

UTILIZATION OF HIGH SULPHUR FUELS WITHOUT AIR POLLUTION

John S. Laurie, Box 27, Mountainville, N.Y. 10953

Filed Sep. 13, 1979, Ser. No. 75,247
Int. Cl.[3] B01J *19/08, 19/12*
U.S. Cl. 204—157.1 R **5 Claims**



1. Method for avoiding air pollution when burning high sulphur fuels, which comprises burning a high sulphur fuel to produce heat energy and gases of combustion including sulphur dioxide, and passing the gases of combustion into the base of a smokestack and across a floodlight located in the base and then across a further floodlight located in an upper portion of the smokestack prior to such gases entering the atmosphere, whereby the sulphur dioxide is decomposed by the floodlight

into sulphur and oxygen so that sulphur dioxide does not enter the atmosphere.

4,253,927

MATERIAL FOR AN ALKALINE CELL SEPARATOR AND A PROCESS OF MAKING

Philip Bernstein, Yardley; James P. Coffey, Hatboro, and Alan E. Varker, Philadelphia, all of Pa., assignors to ESB Inc., Philadelphia, Pa.

Division of Ser. No. 780,579, Mar. 23, 1977, Pat. No. 4,122,133. This application Jul. 17, 1978, Ser. No. 925,591

Int. Cl.[2] **C08F** *255/00*

U.S. Cl. 204—159.17 **8 Claims**

1. A process for making a grafted polymeric composition said process comprising:

(a) providing a quantity of finely divided polyolefin having grafted thereon an ethylenically unsaturated ionogenic monomer, and

(b) fusing said graft polyolefin, wherein during fusing, sulfur is added to and distributed substantially throughout the finely divided polyolefin and exposing said polyolefin to ultraviolet light.

4,253,928

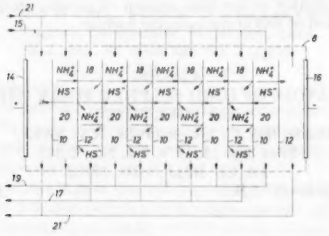
PROCESS FOR SOUR WATER TREATMENT

George C. Blytas, Houston, Tex.; Rudolf J. Maas, Amsterdam, Netherlands; Andreas B. van Aken, Amsterdam, Netherlands, and Christiaan van Schalkwijk, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 4, 1979, Ser. No. 81,708

Int. Cl.[3] **B01D** *13/02*

U.S. Cl. 204—180 P **8 Claims**



1. A process for treating a sour water stream containing H_2S and NH_3 to remove a volatile acidic component and a volatile basic component, which comprises subjecting the stream to an electrodialysis step in which the acidic component and the basic component migrate through fixed anion and cation exchange membranes respectively to a concentrate stream or streams leaving a dilute stream or streams reduced in concentration of acidic and basic components, and steam stripping the concentrate stream to remove the volatile acidic component and the volatile basic component.

4,253,929

METHOD FOR DENITRATION OF TOBACCO EMPLOYING ELECTRODIALYSIS

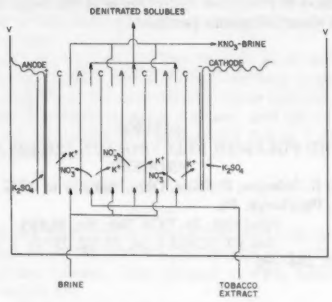
Gus D. Keritsis, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 5, 1980, Ser. No. 127,479

Int. Cl.[3] **B01D** *13/02*

U.S. Cl. 204—180 P **12 Claims**

1. A method for denitrating aqueous tobacco extracts which comprises circulating an acidic tobacco extract having a solids content of about 5–50% and a resistivity of about 8–50 ohm-cm through the alternate cells of an electrodialysis unit having an anion permeable membrane toward the anode spaced no more than about 0.04 inches from an anion impermeable membrane toward the cathode, said membranes having a tightness sufficient to minimize transfer of nonelectrolyte substances, while



circulating brine through the remaining cells and applying about 0.5 to 2.0 volts/cell pair to the unit.

4,253,930

PROCESS FOR ELECTRODEPOSITING CATIONIC COMPOSITIONS

Yasuyuki Tsuchiya, Ichihara; Akio Ichikawa, Kawasaki, and Kastuyoshi Yamasoe, Yokohama, all of Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed Jul. 16, 1979, Ser. No. 57,672

Int. Cl.[3] **C25D** *13/06*

U.S. Cl. 204—181 C **15 Claims**

1. In a method of coating a conductive substrate serving as a cathode which method comprises passing an electric current between an anode and said cathode in electrical contact with a water-dispersed composition comprising a resin obtained by reacting a reaction product (A) of an epoxy group-containing compound with a carboxyl group-containing butadiene/acrylonitrile copolymer at the rate of 1 epoxy equivalent of the former to about 0.2 to 0.7 equivalent of the free carboxyl group of the latter with simultaneously or separately an amino group-containing compound and a partially blocked isocyanato group-containing compound.

4,253,931

ELECTRODE SPUTTERING PROCESS FOR EXHAUST GAS OXYGEN SENSOR

Terry J. Gold, Flint, Mich.; Kurt D. Humphrey, Rolla, Mo.; Keith A. Penney, Davison, Mich.; Robert J. Smith, Flint, Mich.; Randy L. Voto, Flint, Mich., and Ralph V. Wilhelm, Jr., Flint, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 30,748, Apr. 17, 1979, abandoned. This application Nov. 30, 1979, Ser. No. 98,726

Int. Cl.[3] **C23C** *15/00*

U.S. Cl. 204—192 SP **5 Claims**

1. In a method of sputtering platinum onto a solid electrolyte body to form an exhaust gas electrode for an electrochemical-type exhaust gas oxygen sensor, the improvement wherein the platinum is sputtered under an atmosphere consisting essentially of more than about 50% by volume of at least one member selected from the group consisting of nitrogen and oxygen and less than about 50% of an inert gas, in proportion effective to provide low sensor rich-to-lean and lean-to-rich switching response times of less than 600 milliseconds with the electrode as deposited.

4,253,932
UNITARY FRAME AND MEMBRANE FOR ELECTROLYTIC CELLS

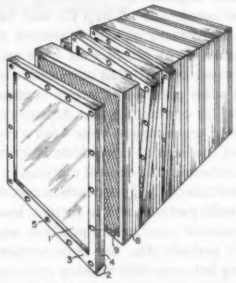
Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,991

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821982

Int. Cl.³ C25B *9/00, 13/02, 13/08*

U.S. Cl. 204—253 **9 Claims**



1. A separatory barrier for use between electrodes of a filter press type electrolytic cell comprising a rigid frame member having a pair of independent and separate frame portions and a permselective membrane disposed between opposing surfaces of each portion, said frame member adapted to hold the membrane on its peripheral edges, said frame portions and membrane detachably secured forming an independent frame and membrane assembly which can be easily removed from the cell and disassembled for membrane replacement without disassembly of adjacent electrode members wherein the peripheral edges of the membrane are in continuous contact with the entire opposing surfaces of each of said frame portions effecting complete separation thereof.

4,253,933
ELECTRODE SUBSTRATE ALLOY FOR USE IN ELECTROLYSIS

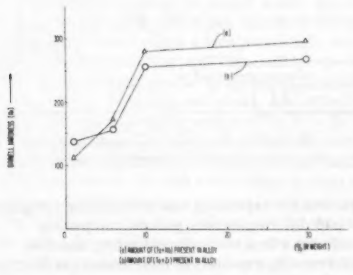
Hideo Sato, Chiba; Takayuki Shimamune, Ichihara; Toshiki Goto, Ichihara, and Hideo Nitta, Ichihara, all of Japan, assignors to Permelec Electrode Ltd., Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 74,946

Claims priority, application Japan, Sep. 13, 1978, 53-111630

Int. Cl.³ C25B *11/10, 11/04;* **C22C** *27/02, 14/00*

U.S. Cl. 204—293 **2 Claims**



1. An alloy for use as a substrate of an electrode for use in electrolysis, said alloy comprising

(1) titanium and

(2) 0.05 to 10% by weight of (a) tantalum and (b) niobium, zirconium or a mixture thereof, wherein the tantalum is present in an amount of 0.01 to 9.99% by weight, with each % by weight being based on the weight of the alloy.

4,253,934
AGING TREATMENT FOR EXHAUST GAS OXYGEN SENSOR

Morris Berg, Grand Blanc; Slater W. Hawes, Fenton; Frederick L. Kennard, III, Holly, and Paul C. Kikuchi, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1979, Ser. No. 30,747

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **3 Claims**

1. In a method of making a sensing element for a solid electrolyte electrochemical exhaust gas oxygen sensor that includes sputtering a porous platinum thin film electrode onto a zirconia body and applying a protective overcoat onto the electrode, the improvement wherein the zirconia body is subsequently heated to a temperature of about 700°–900° C. for at least about 0.5 hours in a substantially pure nitrogen atmosphere without concurrent electrical treatment as a final heat treatment before exposure to exhaust gases and said heat treatment is effective to reduce rich-to-lean switching response time.

4,253,935
METHOD OF PREPARING A DIAPHRAGM HAVING A GEL OF A HYDROUS OXIDE OR ZIRCONIUM IN A POROUS MATRIX

Robert B. Simmons, Norton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 953,132, Oct. 20, 1978, Pat. No. 4,170,538, and Ser. No. 953,133, Oct. 20, 1978, and Ser. No. 953,134, Oct. 20, 1978. This application Sep. 19, 1979, Ser. No. 76,897

Int. Cl.³ C25B *13/00, 13/08*

U.S. Cl. 204—295 **16 Claims**

1. In a method of preparing a diaphragm by contacting a porous matrix with zirconium oxychloride, and thereafter contacting the zirconium oxychloride containing porous matrix with an ammonium compound whereby to hydrolyze the zirconium oxychloride to form a substantially insoluble hydrous oxide of zirconium, the improvement comprising:

a. inserting the porous matrix in a container containing an aqueous liquid composition of the zirconium oxychloride on only one surface of said porous matrix;

b. drawing a vacuum on the surface of said porous matrix opposite the surface contacting the aqueous liquid composition and thereafter releasing the vacuum, whereby to evacuate the porous matrix and draw the aqueous liquid composition into the porous matrix; and

c. thereafter allowing an ammonium compound to penetrate the porous matrix to hydrolyze the zirconium oxychloride.

4,253,936
METHOD OF PREPARING A MEMBRANE CONSISTING OF POLYANTIMONIC ACID POWDER AND AN ORGANIC BINDER

Roger F. R. Leysen, Mol; Philippe Vermeiren, Wemmel; Leon H. J. M. Baetsle, Mol; Gustaaf J. F. Spaepen, Dessel, and Jan-Baptist H. Vandenborre, Kasterlee, all of Belgium, assignors to Studiecentrum voor Kernenergie, S.C.K., Brussel, Belgium

Filed Mar. 13, 1980, Ser. No. 130,131

Claims priority, application Belgium, Mar. 20, 1979, 57673

Int. Cl.³ C25B *13/00, 13/08;* **H01M** *2/16*

U.S. Cl. 204—296 **3 Claims**

1. A method of preparing a membrane consisting of polyantimonic acid powder and an organic binder, comprising the steps of

preparing a solution of the binder in a solvent,
wetting the polyantimonic powder with the same solvent,
grinding the wetted powder,
forming a suspension with the wetted and ground powder and a same solvent,
mixing the suspension with the solution,
pouring on a plate the so obtained viscous liquid,
allowing the solvent to evaporate until a membrane in process of formation begins to dry,
removing further the solvent by lixiviation, and
removing the membrane from the plate.

4,253,937

COAL LIQUEFACTION PROCESS

Robert B. Long, Atlantic Highlands, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 21, 1978, Ser. No. 935,567
Int. Cl.[3] C10G *1/00, 1/06;* **C10B** *57/08, 57/04*
U.S. Cl. 208—8 LE **18 Claims**

1. In a coal liquefaction process wherein particulate coal is converted to a hydrocarbonaceous oil in the absence of a liquid phase solvent, in a coal liquefaction zone, at coal liquefaction conditions, the improvement which comprises:

(a) contacting said particulate coal with a fluid hydrogen donor solvent at a temperature ranging from about 150° to about 350° C. and at a pressure ranging from about 10 to about 150 psig for a time sufficient for said coal to sorb at least a portion of said solvent and thereby swell, and increase in weight by at least about 3 weight percent, and

(b) subsequently subjecting the resulting swollen coal to said coal liquefaction conditions.

4,253,938

PROCESS FOR RETORTING OIL PRODUCTS CONTAINED IN SHALES AND SANDS

Carlo Roma, Rome, Italy, assignor to Square S.p.A., Coira, Switzerland

Filed Dec. 19, 1979, Ser. No. 105,470
Claims priority, application Italy, Sep. 21, 1979, 50323 A/79
Int. Cl.[3] C10G *1/00*
U.S. Cl. 208—11 R **3 Claims**

1. A continuous process for retorting oil products from shale and/or sand material, comprising the steps of,

conveying a layer of said material through a horizontal retort while supporting the material on a metal body,

flowing a gaseous stream through the retort counter-currently to said layer of material,

burning fuel at a location outside the retort to provide a supply of hot combusted gases,

heating said countercurrently flowing gaseous stream by adding said combusted gases thereto at one or more input zones in the horizontal retort,

said heated gaseous stream flowing horizontally through the horizontal retort to exchange heat convectively with the metal body and the material and the retort walls which face the material, whereby the metal body exchanges heat with the material by conduction and the retort walls exchange heat with the material by radiation, said material being heated to vaporize at least some of the oil products contained in said material,

removing vapors from said retort,

condensing said vapors and removing dust therefrom to provide an oil-containing condensate and a stream of uncondensed vapors, decanting said oil-containing condensate and removing carbon dioxide, hydrogen, light hydrocarbon fractions, nitrogen and steam as the stream of uncondensed vapors, and

recycling at least a portion of said uncondensed vapors into the retort as said gaseous stream.

4,253,939

CATALYST AND PROCESS FOR CONVERSION OF HYDROCARBONS

John Mooi, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 21, 1976, Ser. No. 699,005
Int. Cl.[3] C10G *11/18;* **B01J** *29/12*
U.S. Cl. 208—120 **16 Claims**

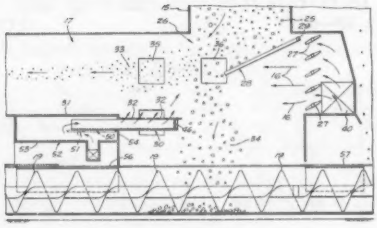
1. In a process for converting a hydrocarbon feedstock which comprises (1) contacting said feedstock in at least one reaction zone with solid particles substantially free of added metal component capable of promoting carbon monoxide oxidation at the conditions of step (2) and being capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions to produce at least one hydrocarbon product and to cause deactivating carbonaceous material to be formed on said solid particles, thereby forming deposit-containing particles; (2) contacting said deposit-containing particles in at least one regeneration zone with a free oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit material to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form at least one carbonaceous deposit material combustion product; and (3) repeating step (1) and (2) periodically, the improvement which comprises: circulating between said reaction zone and said regeneration zone, in intimate admixture with and separate from said solid particles, a minor amount of discrete entities comprising (A) a major amount by weight of a support at least a portion of which is capable of promoting hydrocarbon conversion at the conditions of step (1), and (B) a minor, catalytically effective amount of at least one metal component disposed on at least a portion of said support, said metal component being capable of promoting the conversion of carbon monoxide to carbon dioxide at the conditions of step (2) thereby promoting the oxidation of carbon monoxide to carbon dioxide in said regeneration zone, provided that said discrete entities prior to introduction into said reaction zone-regeneration zone system are more attrition resistant than said solid particles.

4,253,940

METHOD AND APPARATUS FOR SEPARATING WASTE MATERIALS

Harold A. Price, Orange County, Calif., assignor to Watson Energy Systems, Inc., Carson, Calif.

Filed Sep. 24, 1979, Ser. No. 77,981
Int. Cl.[3] B07B *9/00*
U.S. Cl. 209—3 **6 Claims**



1. Apparatus for separating and dehydrating conglomerate materials into differing density groups, comprising:

walls defining a first vertically extending manifold;

means for moving a quantity of inert heated gas downwardly through said first manifold;

means for entraining the conglomerate materials in the gas moving downwardly through said first manifold;

walls defining a separating chamber in communication with the lower end of said first manifold;

walls defining a second manifold extending generally hori-

zontally from and in communication with the separating chamber;

a damper plate affixed to a wall of said separating chamber and located opposite said second manifold and obstructingly partially extending into the downwardly moving materials;

means for directing a second quantity of gas transversely of said first downwardly moving gas across said separating chamber into said second manifold; and

a table interconnected with a lower wall of said second manifold adjustable for selective and variable extension into the separation chamber.

4,253,941

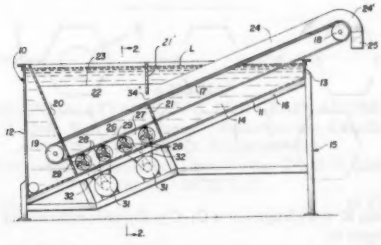
CONTROLLED BUOYANCY SEPARATOR APPARATUS AND METHOD

William J. Lawson, R.D. 1, Box 299E, Milton, Del. 19968

Filed Oct. 3, 1979, Ser. No. 81,311

Int. Cl.³ B03B *5/66*

U.S. Cl. 209—17 **4 Claims**



1. A controlled buoyancy separator for product components of different specific gravities comprising a tank adapted to contain a liquid of lesser specific gravity than the product components requiring separation, a single liquid permeable inclined product conveying and elevating belt including a lower portion submerged in the liquid within the tank and another portion extending above and outside of the tank, said belt having longitudinal edges which are closely adjacent to opposite side walls of the tank, a divider wall for the tank near the center of said belt and parallel to the tank side walls including a portion above, following and closely spaced from the top run of said belt, said last-named portion of the tank divider wall being partly submerged in the liquid within the tank and extending with said belt above and outside of the tank, spaced transverse walls within the tank substantially at right angles to said divider wall and defining a product inlet guide within the tank above said belt and also defining within the tank a restricted zone of controllable buoyancy, and power operated liquid impeller means within the tank near the bottom wall of the tank and within said zone and being operable to induce within said zone a continuously circulating current of said liquid upwardly through said permeable belt between one tank side wall and said divider wall and downwardly through said belt on the opposite side of the divider wall and between the divider wall and the opposite side wall of the tank.

4,253,942

APPARATUS FOR THE SEPARATION OF MIXTURES OF PARTICULATE SOLIDS OF DIFFERENT DENSITY

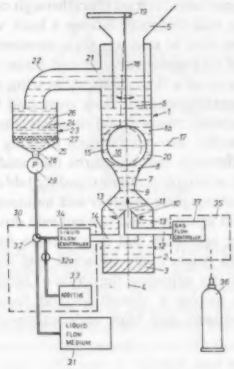
Andreas Gäumann, Feldmeilen, Switzerland, assignor to Gesellschaft zur Förderung der Forschung an der Eidgenössischen Technischen Hochschule, Zurich, Switzerland

Filed Jun. 15, 1979, Ser. No. 48,721

Claims priority, application Switzerland, Jul. 14, 1978, 7655/78

Int. Cl.³ B03B *7/00, 5/66*

U.S. Cl. 209—17 **16 Claims**



1. Apparatus for the separation of a mixture containing two kinds of granular solid particles of any shape and of different density graded to an upper limit of grain size, comprising an upright elongated counterflow separator column through which a flow medium passes upwardly in use, the upper region of said column having an inlet aperture for feeding into said column the mixture to be separated and an outlet aperture for discharging from said column the flow medium containing solid particles of lower density, a collecting vessel connected to the lower end of said column for collecting the solid particles of higher density, a downwardly convergent constriction in the said column above the lower collecting vessel and having a through-flow aperture at its lower end, the upper surface of said constriction serving as a sliding surface for the solid particles, a mixing nozzle located beneath or within the through-flow aperture for flowing at least two flow media upwardly through said constriction, at least one baffle located in said column directly above said constriction and below said inlet aperture and said outlet aperture, said baffle being of smaller cross-sectional size than said column and being disposed in said column for transverse movement relative to the longitudinal axis of said column between random end positions wherein in any one of said end positions said baffle abuts against one portion of the inner wall of said column and is transversely spaced from the diametrically opposite side of the inner wall of said column whereby to define a flow channel between said baffle and said diametrically opposite side of the inner wall of said column, said flow channel leading to said through-flow aperture and having a maximum width which is identical with that of said through-flow aperture.

4,253,943

CONTINUOUS FLOW CLASSIFICATION AND SPECIFIC GRAVITY SEPARATION APPARATUS

Donald D. Thrasher, R.D. #1, North Manchester, Ind. 46962

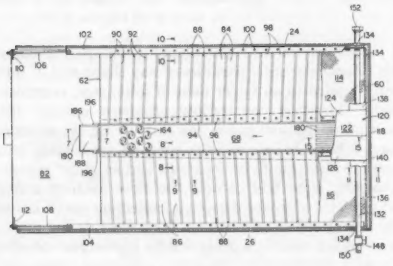
Filed Mar. 31, 1980, Ser. No. 135,683

Int. Cl.³ B03B *5/04, 5/06, 7/00*

U.S. Cl. 209—44 **25 Claims**

1. Continuous flow apparatus for classification and specific gravity separation of relatively fine, heavy sands from gravel and dirt aggregate comprising; an elongated channel structure

having spaced, opposite walls, spaced upstream and downstream ends, and a bottom wall; a top plate member spaced from said bottom wall extending laterally between said side walls and longitudinally substantially between said ends, said top plate member having top and bottom surfaces with said bottom surface defining a longitudinally extending cavity with said side and bottom walls, said side walls having portions upstanding from said top surface of said top plate member and defining therewith a flume extending between said ends, said top plate member having at least a portion thereof extending longitudinally toward said downstream end with a plurality of closely-spaced apertures formed therethrough communicating with said cavity; said structure having a back wall extending from said bottom wall to said top plate member and between said side walls at said upstream end; said flume being adapted for the introduction of a flow of water bearing said aggregate adjacent said upstream end for flow over said top surface of said top plate member toward said downstream end whereby the relatively smaller, heavier material forming a part of said aggregate falls through said apertures into said cavity along with some water; a longitudinally extending table in said cavity spaced below said top plate member and inclined downwardly from adjacent said upstream end toward said downstream end, said table having upstream and downstream ends, said table having side edges respectively adjacent said side walls; first means for selectively adjusting the angle of inclination of said table; said table having a trough formed therein extending longitudinally between said table ends intermediate said side



edges and respectively defining said portions of said table therewith, said trough having a bottom, said table including an extension portion at said downstream end for discharging tailings from said downstream end, said extension portion extending generally from said trough bottom and having an opening therein adjacent said downstream table end communicating with a sump portion of said cavity disposed below said extension portion for discharging said heavy sands thereto; weir means for diverting flow of a selected heavier portion of the sands at the bottom of said trough through said opening into said cavity sump portion while permitting flow of the remaining lighter portion of said sands over said weir means onto said extension portion; second means for selectively adjusting said weir means thereby to select said heavier sand portion; longitudinally extending baffle means over said trough for diverting material and water falling through said apertures onto said table side portions; riffle means on each of said table side portions under said apertures for receiving said material and water falling through said apertures and separating the heavier material therefrom, said riffle means respectively extending laterally from said side table edges to said trough and being respectively inclined downstream from said side table edges toward said trough for carrying the heavier sands to said trough; third means for selectively adjusting the angle of inclination of said riffle means; means for selectively introducing an additional flow of water into said cavity adjacent said upstream table end and between said table and said top plate member for flow over said riffle means and in said trough toward said downstream table end; and means for removing the separated heavier sands from said cavity sump portion.

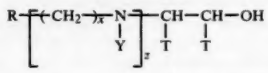
4,253,944

CONDITIONER FOR FLOTATION OF OXIDIZED COAL

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

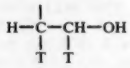
Filed Dec. 28, 1979, Ser. No. 107,951
Int. Cl.[3] B03D *1/02*
U.S. Cl. 209—166 **9 Claims**

1. A froth flotation process for beneficiating coal which comprises floating coal particles of flotation size in a frothing aqueous medium in the presence of a fuel oil collector and an effective amount of a condensation product of a fatty acid or fatty acid ester and a compound represented by the formula I

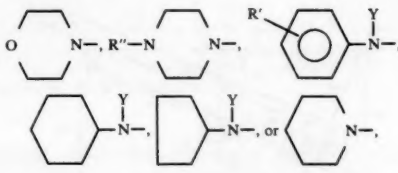


I

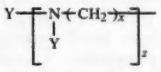
wherein z is 0 or 1; x is 2 or 3; T at each occurrence is independently hydrogen, ethyl or methyl; Y is hydrogen or



R is



wherein R′ is hydrogen or a C_1–C_{20} aliphatic radical and R″ is hydrogen or



in which z, x, T and Y have the aforementioned meanings; said condensation product being prepared using a molar ratio of at least about one mole of fatty acid or ester for each mole of the compound of formula I and said condensation product being employed in its free form or as an acid derivative.

4,253,945

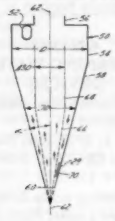
HIGH CONSISTENCY PULP CLEANING

Alkibiadis Karnis, Quebec, Canada, assignor to Domtar Inc., W. Montreal, Canada

Filed Aug. 10, 1979, Ser. No. 65,463
Int. Cl.[3] B04C *5/08*
U.S. Cl. 209—211 **5 Claims**

1. A method for cleaning pulp comprising, feeding a slurry of pulp at a pulpable consistency of at least 1% to a hydrocyclone means, said hydrocyclone means having a tangential inlet, a conical section, base outlet, apex outlet and tangential dilution water inlet means in said conical section adjacent said apex outlet, continuously ejecting a reject fraction through said apex outlet, injecting dilution water tangentially to said

cyclone means through said dilution water inlet means at a velocity substantially equal to the velocity of pulp in said hydrocyclone means at said dilution water inlet means, substantially all of said dilution water being ejected through said apex outlet as a portion of said reject fraction and in a quantity sufficient to maintain the consistency of said reject fraction no greater than 1.1% and providing a dilution zone extending between said dilution water inlet means and said apex outlet for



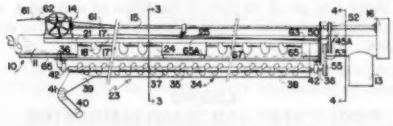
a distance such that classification occurs at an efficiency substantially equivalent to the efficiency of a similar hydrocyclone without dilution water but operated at a feed consistency of about 0.6%, ejecting an accept fraction through said axial base outlet said accept fraction having a consistency substantially equal to said feed consistency thereby to provide a cleaned accept pulp leaving said cleaner through said base outlet at a consistency substantially the same as the feed.

4,253,946

CLEANING ATTACHMENT FOR GRAIN AUGERS

Louis Ludwig, Box 219, Lampman, Saskatchewan, Canada

Filed Jun. 18, 1979, Ser. No. 49,467
Claims priority, application Canada, May 29, 1979, 328887
Int. Cl.³ B07B *1/20*
U.S. Cl. 209—283 **19 Claims**



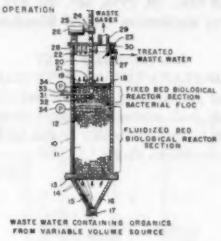
1. In an auger assembly which includes an elongated auger tube and an auger shaft and flight rotatable therein and having an intake end and a discharge end and means to drive said shaft and flight; a cleaning assembly for said auger assembly, said cleaning assembly comprising in combination at least one longitudinally extending aperture formed in the under side of the auger tube, a sieve component enclosing said opening, a shroud enclosing said sieve component and an auxiliary auger shaft and flight journalled for rotation within said shroud to move material in said shroud towards one end thereof, discharge means at said one end of said shroud, means to drive said auxiliary auger shaft, a tension brace assembly for said tube extending from adjacent one end thereof to adjacent the other end thereof and compression brace means secured along the under side of said tube, said compression brace means including an angle member secured by the side edges of the side flanges thereof, to the underside of said tube and a brace rod secured to said angle member along the junction of said side flanges thereof.

4,253,947

METHOD FOR WASTEWATER TREATMENT IN FLUIDIZED BED BIOLOGICAL REACTORS

Liang-Tseng Fan, Manhattan, Kans., and Chin-Yung Wen, Morgantown, W. Va., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Feb. 12, 1979, Ser. No. 11,520
Int. Cl.³ B01D *33/40, 37/00*
U.S. Cl. 210—610 **10 Claims**



1. The method of carrying out a fluidized bed biological reaction for advanced treatment of wastewater, in which there is provided within a confined upwardly-extending treatment zone an upflow bed of solid particulate carrier having the biological reaction bacteria cells growing thereon, said wastewater to be treated being passed upwardly through said bed at a velocity at least sufficient to fluidize said bed; wherein the improvement comprises:

(a) restraining the top of said bed with a perforated plate to maintain a smaller uppermost portion of said bed as a fixed bed with a larger portion of said bed therebeneath being in fluidized condition, the perforations in said plate being of smaller size than said carrier so as to retain said carrier in said treatment zone while permitting the treated water to pass therethrough;

(b) continuing to pass the wastewater to be treated through said bed for initial biological reaction in said fluidized bed portion and final biological reaction in said fixed bed portion until said fixed bed portion has become clogged with cellular material;

(c) discontinuing said treatment and raising said plate to a level out of contact with said bed when fully fluidized and above an outlet from said confined space which is located at a level normally above said plate during said treatment; and

(d) passing wash water upwardly through said bed at a velocity sufficient to fully fluidize said bed while removing wash water together with excess cellular material through said outlet, the fixed portion of said bed being broken up and fluidized to release cellular material therefrom.

4,253,948

DEHYDRATION OF WATER SOLUBLE MONOMERS WITH LIQUID CARBON DIOXIDE

Harley F. Hardman, Lyndhurst, and Albert P. Schwerko, Solon, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed May 14, 1979, Ser. No. 38,744
Int. Cl.³ B01D *11/04;* **C07C** *121/30, 51/42*
U.S. Cl. 210—634 **12 Claims**

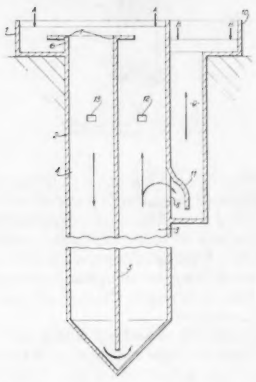
1. In the process for the separation of water from an aqueous solution containing organic chemicals miscible with CO_2 by the steps of:

(a) contacting the aqueous solution with liquid carbon dioxide to form an extract phase of the organic chemical, carbon dioxide and some water, and a raffinate phase containing water;

(b) separating the extract phase from the raffinate phase;

(c) crystallizing by cooling and separating carbon dioxide hydrate from the extract phase; and
(d) evaporating the carbon dioxide.

4,253,949
SEWAGE TREATMENT-FLOTATION APPARATUS
David A. Hines; Richard T. Jones, and Frank C. Roesler, all of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Mar. 29, 1976, Ser. No. 671,543
Claims priority, application United Kingdom, Apr. 7, 1975, 14142/75
Int. Cl.[3] B01D *21/01*
U.S. Cl. 210—703 **14 Claims**



1. A method of treating sewage including a solids-liquid mixture in apparatus including a basin having a downcomer extending downwardly therefrom, and a riser operatively communicating with said downcomer both through said basin and at the lower end of said downcomer, said method comprising the steps of continuously circulating the sewage contained in the basin-downcomer-riser system down said downcomer, up said riser, and back down said downcomer until sufficient treatment of the sewage is achieved, and supplying oxygen-containing gas to said down-comer so that said gas flows co-currently with sewage flowing down said downcomer, and upwardly with said sewage in said riser, at least some of the oxygen-containing gas being dissolved in said sewage, the improvement comprising

separating a portion of the upwardly moving sewage in said riser with dissolved gas contained therein from the sewage moving upwardly in said riser, and

gradually decreasing the hydrostatic pressure on said separated portion to release the dissolved gas from solution to form gas bubbles attached to solid particles present in said separated sewage portion and thereby effectively separate the solid particles from the liquid in the separated sewage portion.

8. Apparatus for sewage treatment comprising a basin, a downcomer having an upper opening therefore in operative communication with said basin and extending downwardly from said basin to a bottom opening, a riser having a bottom opening thereof in communication with the bottom opening of said downcomer and having an upper opening thereof in operative communication with said basin, said basin, downcomer, and riser comprising a basin-downcomer-riser system, means for continuously circulating the sewage contained in the basin-downcomer-riser system down said downcomer, up said riser, and back down said down-comer until sufficient treatment of the sewage is achieved, and means for supplying gas to said downcomer so that said gas flows co-currently with sewage in said riser, wherein the improvement comprises a flotation chamber operatively connected to said riser and extending upwardly from the area of connection thereof to said riser, and

means associated with said flotation chamber for effecting passage of a portion of the upwardly moving sewage in said riser with dissolved gas therein into said flotation chamber so that the dissolved gas is released from solution during upward flow of sewage in said flotation chamber to form gas bubbles attached to solid particles present in said upwardly flowing sewage to carry the solid particles to the top of the liquid in said flotation chamber.

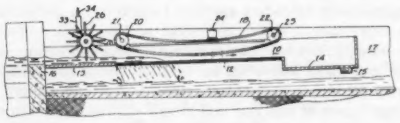
4,253,950
METHOD FOR CLEANING WATER CONTAINING DEVICES
John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Mar. 1, 1979, Ser. No. 16,664
Int. Cl.[3] C02F *5/08*
U.S. Cl. 210—696 **13 Claims**

1. A process for inhibiting scale formation on the interior surfaces of a toilet bowl or a toilet flush tank, which comprises maintaining an aqueous dibasic magnesium hypochlorite solution in contact with said interior surfaces, said aqueous solution having an available chlorine concentration in the range from about 0.1 to about 20.0 parts per million by weight, said chlorine concentration derived from solid granules of dibasic magnesium hypochlorite maintained within said toilet bowl or said toilet tank, and in contact with said aqueous solution, whereby the formation of scale on said interior surfaces is inhibited.

4,253,951
METHOD OF REDUCING AEROSOLIZATION OF WASTEWATER
Homer W. McCune, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 959,405, Nov. 9, 1978, abandoned. This application Jan. 31, 1980, Ser. No. 117,316
Int. Cl.[3] C02F *1/00*
U.S. Cl. 210—749 **4 Claims**

1. A method of reducing aerosolization of wastewater from a flush toilet during the next succeeding flushing of said toilet, said method comprising the step of dispensing into the bowl of said toilet, prior to the next succeeding use and flushing of said toilet, a sufficient amount of a water-soluble poly(ethylene oxide) resin so as to produce a concentration of said resin of from about 1 to about 30 ppm in the bowl of said toilet, said resin having a molecular weight of from about 100,000 to about 7,000,000.

4,253,952
WEED SCREEN AND TRASH ELIMINATOR
Don Grebb, Rte. 1 - 1485 Highway 28, Quincy, Wash. 98848
Filed Apr. 2, 1979, Ser. No. 26,171
Int. Cl.[3] B01D *35/02*; E02B *3/20*
U.S. Cl. 210—159 **4 Claims**



1. A weed screen and trash eliminator for use in irrigation canal systems, comprising:

a rigid open frame having longitudinal sides extending from a front end of the frame that is adapted to abut a weir or other water delivery structure to a rear end of the frame that is adapted to be located downstream from its front end;

a longitudinal stationary screen extending transversely between the sides of the open frame and including a planar upper screen surface having a front transverse edge and a rear transverse edge;

movable endless conveyor means mounted along the sides of the frame, said conveyor means including working flights spanning the length of the screen and arranged parallel to the planar upper screen surface;

transverse bristle brush means fixed across the conveyor means for engagement against the upper screen surface as the brush means is carried along the working flights of said conveyor means;

motive means mounted on said framework and operably connected to said conveyor means for imparting motion to said conveyor means for imparting motion to said conveyor means in a direction such that the brush means fixed thereto is swept along the upper screen surface from its front edge to its rear edge;

means on the frame for directing incoming water from the weir or other water delivery structure onto the planar upper screen surface;

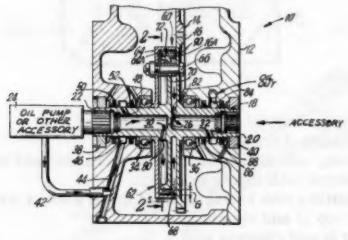
and an elevationally recessed catch pan fixed across the frame immediately adjacent the rear edge of the screen, said catch pan having solid walls adapted to retain material swept from the rear edge of the screen by said brush means.

4,253,953

CENTRIFUGAL OIL FILTER

Zoltan L. Libertini, Stamford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Jun. 25, 1979, Ser. No. 51,948
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—168 **4 Claims**



1. In a gas turbine engine a centrifugal filter assembly for removing contaminant particles from lubricating oil comprising:

a hollow shaft rotatably mounted in a gear box of the gas turbine engine, said hollow portion being axially divided into separate input and output passageways;

a cylindrical member closed at one end to form an interior chamber removably mounted on the shaft for rotation therewith;

a disc shaped gear fixed to the shaft for rotation therewith and removably secured to the cylinder member in a position causing a side face of the gear to form a closure for the interior chamber, said gear being operatively associated with a gear train of the gear box to rotatably drive the shaft; and

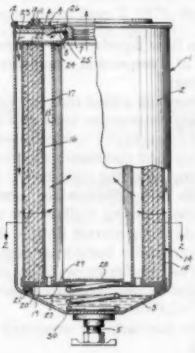
a disc concentric with and fixedly secured to said shaft for rotation therewith, said disc being radially disposed within said chamber to divide said chamber into radially extending first and second channels and being spaced from the circumferential periphery thereof, to allow communication between said channels over the edge of the disc, said shaft openings connecting said input and output passageways with the first and second channels respectively in order to direct the flow of lubricating oil, in turn, from said input passageway radially outward, past the annular collection zone, and then radially inward to the output passageway.

4,253,954

TWO-STAGE SPIN-ON SEPARATING DEVICE

David G. Midkiff, and Rajan A. Jaisinghani, both of Stoughton, Wis., assignors to Nelson Industries, Inc., Stoughton, Wis.

Filed Jul. 2, 1979, Ser. No. 54,300
Int. Cl.³ B01D *29/26*
U.S. Cl. 210—168 **2 Claims**

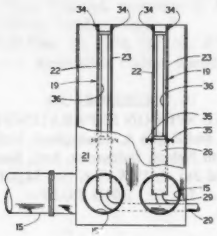


1. A separating device for separating a material from a liquid, comprising a casing having an open end, a cover assembly enclosing the open end and including a liquid inlet conduit and a liquid outlet conduit, a first of said conduits being located axially of the casing and having a threaded connection for attachment to a liquid flow system, an annular primary separating unit disposed within the casing, an annular secondary separating unit disposed within the casing and located in spaced downstream relation to the primary separating unit to provide an annular chamber therebetween, a lower end cap structure secured to the lower ends of the separating units, an upper end cap structure secured to the upper ends of the separating units, said separating units, said lower end cap structure and said upper end cap structure comprising a pre-assembled integral unit, means for attaching the cover assembly to the open end of the casing, biasing means disposed between the central portion of lower end cap structure and the bottom portion of the casing for urging said integral unit upwardly toward said cover assembly, said lower end cap structure being spaced from the bottom of the casing to provide a sump, drain means disposed in the lower end cap structure and providing communication between said annular chamber and said sump, and an annular gasket disposed between the lower surface of the lower end cap structure and the bottom of the casing, said drain means disposed radially between said annular gasket and said biasing means, the bottom of said casing being provided with a downwardly and inwardly sloping peripheral portion and said annular gasket being disposed in engagement with said sloping portion, said gasket serving to seal the lower end cap structure to said bottom and said sloping portion serving to said in centering said pre-assembled integral unit within the casing.

4,253,955
LIQUID-SOLIDS SEPARATOR

Richard L. Kline, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Jul. 25, 1979, Ser. No. 60,643
Int. Cl.³ B01D *29/04*
U.S. Cl. 210—172 **13 Claims**



1. A continuous flow liquids-solids separator for separating liquids and solids of a suspension, comprising:

a liquids reservoir;

a solids separating tank within the reservoir, said tank being of an essentially rectangular cross-sectional configuration having a pair of generally vertically extending perforate walls providing fluid communication for separated liquids between the interior of the tank and the reservoir, and said perforate walls being disposed in substantially coplanar relation to form opposing walls of the tank;

inlet means for directing entrant flow of the suspension into the tank in a generally horizontal direction substantially parallel with said perforate walls to augment the solids barrier provided by said walls between the interior of the tank and the reservoir;

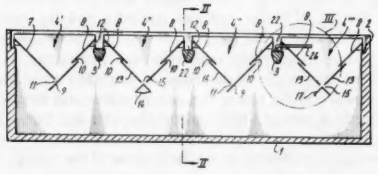
outlet means for discharge of separated liquids from the reservoir; and

bleed discharge means connected with said tank below said inlet means accommodating evacuation of separated solids from the tank concurrent with discharge of separated liquids through said outlet means.

4,253,956
APPARATUS FOR THE ANAEROBIC PURIFICATION OF WASTE WATER

Kees C. Pette, Bennekom, Netherlands, assignor to N.V. Centrale Suiker Maatschappij, Amsterdam, Netherlands

Filed May 21, 1979, Ser. No. 40,990
Claims priority, application Netherlands, May 23, 1978, 7805584
Int. Cl.³ B01D *19/00*
U.S. Cl. 210—188 **13 Claims**

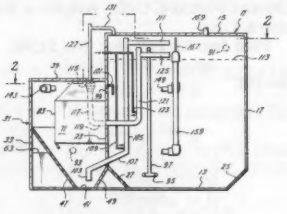


1. In an apparatus for the anaerobic purification of waste water (sewage or industrial waste) with a reactor tank for methane fermentation and an aftersettling (clarification) compartment in the upper part of the reactor tank, said aftersettling compartment having a discharge opening in the lower part towards the reactor tank so that active anaerobic sludge separated in the aftersettling compartment is allowed to flow back to the reactor tank, and an entry opening in a higher zone, through which the mixture of said sludge and water is allowed to flow from the reactor tank into the aftersettling compartment, with means to separate the generated gas flowing upwards from the mixture of sludge and water before this mixture flows into the aftersettling compartment, the improvement comprising an interruption in the inclined wall of said after setting compartment forming said entry opening, the parts to both sides of the interruption being at a distance from each other as measured from the lower point of the wall part above the interruption in a direction perpendicular to the wall part below the interruption said distance being sufficient, so that the opening is screened from gas rising in the reactor tank while allowing the mixture of sludge and water to flow into the aftersettling compartment, the lower part of the said wall below the interruption being at a distance from an opposite wall part of the aftersettling compartment to form together therewith the said lower discharge opening.

4,253,957
MARINE SEWAGE DISPOSAL

Dennis W. Sullivan, New Iberia, La., assignor to Red Fox Industries Inc., New Iberia, La.

Filed Oct. 9, 1979, Ser. No. 82,964
Int. Cl.³ C02C *1/26*
U.S. Cl. 210—195.3 **19 Claims**



1. Sewage disposal apparatus comprising

an aeration chamber having an inlet,

a settling tank adjacent said aeration chamber and having a common wall therewith,

said settling tank having a closed top at a lower level than the top of said chamber,

a port in said common wall,

baffle means extending from said wall on opposite sides of said port separating a portion of the interior of said tank providing a pond,

a slush skimmer suction nozzle having its inlet at the top of the pond,

a sludge suction nozzle adjacent the bottom of the tank,

a distributed outlet located at the interior of said tank outside said pond,

first pipe means including a downcomer pipe connected at its upper end to said suction nozzle and at its lower end to a first cross-over pipe extending through said common wall and a first riser connected at its lower end to said cross-over pipe and its upper end to a slush discharge pipe,

second pipe means including a second cross-over pipe extending through said common wall connected to said sludge suction nozzle and a second riser connected at its lower end to said second cross-over pipe and at its upper end to a sludge discharge pipe,

third pipe means including a third cross-over pipe extending through said common wall connected to said distributed outlet and a standpipe connected at its lower end to said third cross-over pipe and at its upper end to a downcomer discharging to a disinfectant chamber,

said first and second risers and standpipe and downcomer being located in said aeration chamber.

4,253,958

METHOD OF TREATING POLLUTED AQUEOUS MEDIA

Poul A. Jodehl, Idrottsgatan 10, S-260 22 Tagarp, Sweden

Filed Aug. 30, 1979, Ser. No. 70,773
Claims priority, application Sweden, Sep. 7, 1978, 7809415
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—728 **5 Claims**

1. In a method of purifying polluted aqueous media selected from the group consisting of domestic waste water, and municipal and industrial effluent by flocculation, the steps comprising:

(a) mixing the aqueous media with an effective amount of a product prepared by dissolving calcium lignin sulphonate with an standardized iron content of from 0.05 to 0.15% based on the weight of said sulphonate in 1 liter of water per 100 g of said sulphonate and mixing with from 0.5 to 10 g of ceric sulphate, a solution being formed, of which from 0.1 to 1.0 cm^3 per liter of said solution is withdrawn and mixed with from 5 to 15 cm^3 per liter of said solution of a 10 to 30% aluminium sulphate solution at a temperature ranging from room temperature to approximately 50° C. to form said product;

(b) subjecting the aqueous media containing the product produced according to (a) to agitation for flocculation of substantially all of the pollutants present in the aqueous medium to obtain a pure aqueous phase and a water insoluble flocculated sludge phase; and

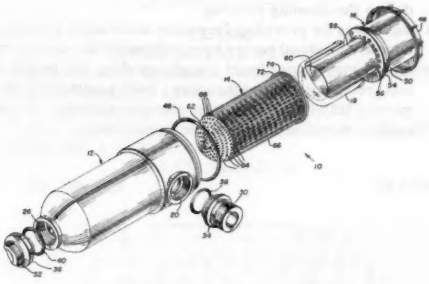
(c) separating the water-insoluble flocculated phase from said pure aqueous phase.

4,253,959

LIQUID FILTER VESSEL

Peter T. Tafara, 4803 Spring St., Neptune, N.J. 07753

Filed Jul. 9, 1979, Ser. No. 55,629
Int. Cl.³ B01D *29/10*
U.S. Cl. 210—232 **5 Claims**



1. A liquid filter vessel comprising:

(a) an elongated hollow housing having an open end and a closed end, said housing being provided with an internally protruding ledge disposed away from said open end, inlet and outlet means and an externally threaded portion disposed proximate said open end, said inlet means being disposed between said ledge and said open end, said outlet means being disposed proximate said closed end:

(b) a filter bag having a protruding lip portion;

(c) porous basket means disposed within said housing, said basket means being provided with a plurality of axially disposed and closely spaced external ribs for strengthening said basket means and positioning said basket means away from the internal wall of said housing for enhancing the liquid flow and an outwardly extending flange for cooperating with said housing ledge and centrally positioning said basket means within said housing, said basket means being provided with a peripheral groove in the upper surface of said flange for receiving the lip portion of said filter bag; and

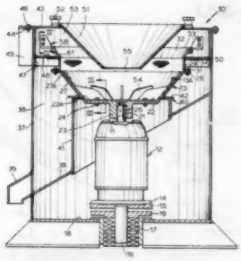
(d) threaded cover means for cooperating with said housing threaded portion and sealing said housing open end, said cover means being provided with a first centrally disposed portion terminating in an outwardly extending flange having apertures provided therein and a coaxial second portion extending beyond said flange, said cover means flange cooperating with said basket means peripheral groove to retain the lip of said filter bag in place when said cover means is in position, said cover means, housing and basket means being fabricated from non-metallic materials.

4,253,960

CHIP DISCHARGE FOR CONTINUOUS CHIP WRINGER

Robert H. Dudley, and Larry D. Areaux, both of Kalamazoo, Mich., assignors to Reclamet, Inc., Kalamazoo, Mich.

Continuation of Ser. No. 963,297, Nov. 24, 1978, abandoned, which is a division of Ser. No. 840,954, Oct. 11, 1977, Pat. No. 4,137,176. This application Dec. 7, 1979, Ser. No. 101,996
Int. Cl.³ B01B *1/28;* B01D *33/10*
U.S. Cl. 210—373 **2 Claims**



1. A centrifuge for continuously separating a lubricating liquid from lubrication-impregnated metal shavings or the like, comprising:

a motor having a rotatable drive shaft;

inlet means;

substantially bell-shaped centrifugal drum means having an end wall, sidewall portion and a shaving dispensing edge remote from said end wall and openings in said sidewall portion for the discharge of the liquid therethrough intermediate said end wall and said shaving dispensing edge;

power transmission means for transmitting rotatable output from said drive shaft to said drum;

wear resistant liner means received in said drum means and having a contour conforming to the contour of said end wall and at least a portion of said conical wall portion and including means to facilitate the passage of liquid through said openings, said liner means having a plurality of arcuately spaced, upstanding and radially extending blade means fixedly mounted thereon, said blade means being fixedly secured to both the end wall and to the sidewall portion of said liner means, said blade means extending a substantial distance away from said end wall and along said sidewall, said blade means further extending radially inwardly from said sidewall a substantial distance toward the center of said drum means but terminating short thereof so that an arcuate space exists between the radially inwardly facing edges of said blade means dimensioned to facilitate the entry of metal shavings or the like into said arcuate spacing between said blade means and to minimize the striking force of said blade means on said metal shavings or the like, the radially inwardly facing edge of said blade means being continuously radially outwardly inclined at an acute angle to said end wall, said liner means being positioned in alignment with said inlet means so that

said metal shavings or the like will first strike said liner means, enter into said arcuate spacing between said blade means and be accelerated by said blade means radially over said lined portion, said accelerated metal shavings or the like effecting wear on said liner means; and

releasable connecting means for releasably connecting said liner means to the interior of said drum means for rotation therewith;

whereby said liner means is easily replaced by releasing said releasable connecting means, removing a worn liner means and insertion of a new liner means, followed by a connecting of said connecting means.

4,253,961

VIBRATORY CENTRIFUGE FOR THE DEWATERING OF COAL SLUDGE

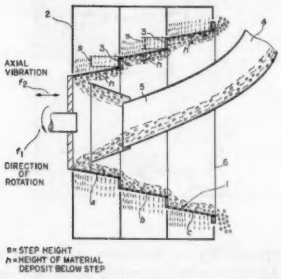
Ludwig Schlebusch, Mülheim, and Herbert Schiele, Kettwig, both of Fed. Rep. of Germany, assignors to Siebtechnik GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 946,534, Sep. 28, 1978, abandoned. This application Jan. 8, 1980, Ser. No. 110,535

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 7733219[U]

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—380.3 **6 Claims**



1. A vibratory centrifuge for the dewatering of coal sludge, washed small coal or slack to provide a cake of a substantial deposit depth, comprising a revolvable conical screen adapted to have deposited thereon a layer of said sludge, coal or slack for dewatering and having a diameter which increases towards its discharge end, said screen being adapted to vibrate in its axial direction and being stepped in at least one radial plane, each of said steps being at least 20 mm in height and wherein the ratio of step height to deposit depth is from 1 to 3.

4,253,962

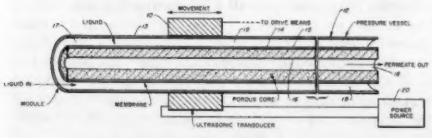
NON-DESTRUCTIVE VIBRATORY CLEANING SYSTEM FOR REVERSE OSMOSIS AND ULTRA FILTRATION MEMBRANES

John R. Thompson, Camarillo, Calif.

Filed Dec. 12, 1979, Ser. No. 102,589

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—414 **12 Claims**



1. A non-destructive vibratory cleaning system for reverse osmosis and ultra filtration membranes, comprising:

a. a pressure vessel through which liquid to be purified is circulated;

b. a hollow porous core positioned within and substantially along the length of said pressure vessel;

c. an osmotic membrane layer surrounding the outer surface of said porous core;

d. said hollow porous core being of such dimensions that the liquid to be purified can circulate freely between inner walls of said pressure vessel and said osmotic membrane on the outer surface of said core;

e. means for drawing off purified liquid from within said hollow porous core;

f. means for providing frequency modulating sweeps of intense vibrational energy, where the frequency changes linearly or non-linearly with time, back and forth along the length of said osmotic membrane, to provide vibration to said osmotic membrane for scouring off contaminants thereon into said circulating liquid to be purified while prohibiting the formation of standing waves of vibrational energy destructive to said osmotic membrane;

g. said means for providing frequency modulating sweeps of intense vibrational energy being adjustable for varying the rate of movement of the sweeps along the length of said osmotic membrane and for varying the intensity of the vibrational energy level to provide frequency change versus time to eliminate destructive standing waves of long duration; said frequency sweep being systemically repeated within the swept frequency spectrum for continuous operation and use of said osmotic membrane during purification of the liquid while assuring the effective cleaning of said osmotic membrane without damage thereto;

h. said means for providing frequency modulating sweeps of vibrational energy comprising an ultrasonic transducer slideably mounted about the exterior of said pressure vessel and which is physically and automatically moved back and forth along the length of said pressure vessel during the cleaning process;

i. said means for providing frequency modulating sweeps of intense vibrational energy being adjustable for varying the rate of movement of said transducer along the length of said pressure vessel and the energy level generated by said moving transducer to assure effective cleaning of said osmotic membrane without damage thereto.

4,253,963

ASYMMETRICAL ULTRAFILTRATION MEMBRANE ON THE BASIS OF CELLULOSE TRIACETATE

Walter Franken, Bovenden; Dieter Nussbaumer; Horst Perl, both of Goettingen, and Ludwig Weickhardt, Bovenden, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Goettingen, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,805

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2816086

Int. Cl.³ B01D *39/18*

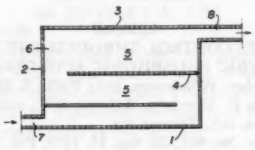
U.S. Cl. 210—500.2 **11 Claims**

1. In a dry ultrafiltration membrane having an asymmetrical pore structure comprising cellulose triacetate or cellulose triacetate mixed with cellulose diacetate, the improvement wherein said membrane comprises additive means for enhancing wettability, said additive comprising hydrophobic synthetic silicic acid.

4,253,964
DEVICE FOR BRINGING ABOUT PARTICLE GROWTH IN A FLOWING LIQUID SUSPENSION

Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Assendelft, Netherlands

Filed Jan. 21, 1977, Ser. No. 761,281
Claims priority, application Netherlands, Jan. 28, 1976, 7600848
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—513 **4 Claims**



1. A device for bringing about particle growth in a flowing liquid suspension, comprising:

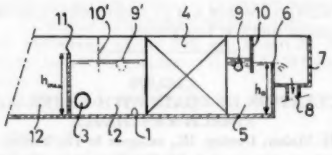
at least two tubes, spaced apart, having parallel longitudinal axes lying in a common plane, of substantially equal length, and extending side-by-side between two spaced planes perpendicular to the common plane, the common plane inclined at an angle with respect to vertical;

at least one bend element including a generally U-shaped tube connecting adjacent ends of successive pairs of said tubes so as to form a continuous flow channel with alternating direction of flow extending successively through said tubes and said bend elements alternately, the cross sectional area of said flow channel perpendicular to the direction of flow always exceeding a predetermined area so that the flow velocity along said flow channel remains smaller than the velocity at which particle growth is annihilated.

4,253,965
PURIFICATION DEVICE

Jacob Pielkenrood, Krommenie, Netherlands, assignor to Pielkenrood-Vinitex B.V., Assendelft, Netherlands

Filed Sep. 29, 1975, Ser. No. 617,735
Claims priority, application Netherlands, Oct. 10, 1974, 7413316; Sep. 2, 1975, 7510357
Int. Cl.³ B01D *21/02*
U.S. Cl. 210—519 **18 Claims**



1. A purification device protected against excessive input flow of a liquid bearing an impurity, comprising:

a buffer basin;

a supply channel having an emergency discharge weir for discharging liquid into said buffer basin when the level of the liquid in the supply channel exceeds a predetermined value h_{MAX};

a separator communicating with said supply channel for receiving liquid from it to be purified by said separator;

a discharge channel for receiving the liquid after it has been purified by the separator; and,

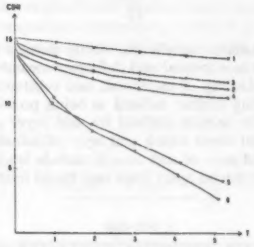
flow rate limiting means communicating in series with the separator between the supply channel and the discharge channel and having a substantially greater flow resistance for flow rates exceeding a predetermined value Q_{MAX}, related to h_{MAX}, than for lesser flow rates;

whereby, when the flow through the separator equals or exceeds Q_{MAX}, any further increase of liquid in said supply channel will be deterred by the increased flow resistance from flowing through the separator and will therefore tend to increase the level of liquid in the supply channel causing an increase in flow over said emergency discharge weir.

4,253,966
PROCESS FOR BIOLOGICAL DENITRIFICATION OF WATERS

Yves Lebesgue, Colombes, and Frederic Miglioretti, Chateaubriand, both of France, assignors to Omnium d'Assainissement, Courbevoie and Argiles & Minereaux, Montguyon, both of, France

Filed Aug. 1, 1979, Ser. No. 63,110
Claims priority, application France, Aug. 2, 1978, 78 22779
Int. Cl.³ C02F *3/28*
U.S. Cl. 210—610 **7 Claims**



1. A process for the biological denitrification of water in an anaerobic medium by passage of the water to be purified through a submerged, fixed bed of granular material in the presence of heterotrophic denitrifying bacteria, comprising using as the granular material a fired clay containing 1 to 5 parts per thousand in relation to the clay of molybdenum, wherein the fired clay used as denitrification support is obtained by firing at a temperature above 1000° C. a raw clay selected from the group consisting of illite, kaolite, montmorillonite and mixtures thereof and to which has been added, before firing, molybdic acid or alkaline molybdate, the resulting fired clay then being ground and sifted to an average granulometry between 1 and 5 mm.

4,253,967
BLOOD TREATING METHOD

Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

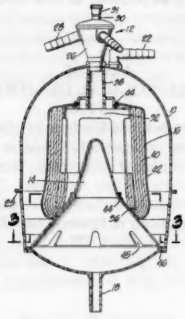
Division of Ser. No. 644,451, Dec. 29, 1975, Pat. No. 4,157,965, which is a continuation-in-part of Ser. No. 542,593, Jan. 20, 1975, abandoned. This application Apr. 9, 1979, Ser. No. 28,531
The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—645 **7 Claims**

1. A method for receiving and treating blood during surgical procedures comprising:

receiving blood into a housing through a blood inlet at the top of said housing and passing said blood through a predetermined blood flow path through said housing and outwardly through a blood outlet positioned at the bottom of said housing;

removing air bubbles and other foreign material from said blood interposed in said blood flow path by defoamer means through which said blood flows radially outward,

said defoamer means including a layer of defoamer material extending about a defined interior section of said housing into which blood flows from said blood inlet means, said defoamer means being positioned such that blood flow from the interior of said housing to the blood outlet means must pass through said defoamer means; and controlling said blood flow by passing said blood uniformly



and substantially radially outwardly along a substantially conical surface toward said defoamer means thereby preventing splashing of the blood, said substantially conical surface being further defined as being positioned within said interior section defined by said layer of defoamer material and about which said layer of defoamer material extends said apex of said conical surface being positioned below and spaced apart from said blood inlet means.

4,253,968

PROCESS OF INHIBITING PRECIPITATION OF CALCIUM SALTS UTILIZING A COPOLYMER OF ALLYL MONOMERS AND MALEIC ANHYDRIDE

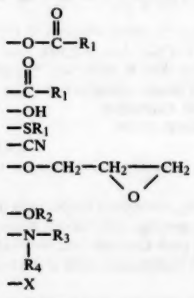
Gordon E. Eastman, Houston, Tex., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 829,694, Aug. 31, 1977, abandoned.
This application Aug. 17, 1979, Ser. No. 67,641
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—698 **9 Claims**

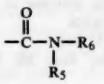
1. A process for inhibiting the deposition of scale onto the surfaces of metals in open recirculating cooling water systems, said process consisting essentially of adding to the water in the cooling water system from about 0.5 parts per million to about 100 parts per million of a copolymer of maleic anhydride and an allyl compound having the formula:

$$CH_2{=}CH{-}CH_2{-}R$$

wherein R is a radical selected from the group consisting of



wherein R_1 is hydrogen or a straight or branched chain alkyl group having from 1 to 5 carbon atoms; R_2 is a straight or branched chain alkyl having from 1 to 5 carbon atoms; R_3 is hydrogen, and R_4 is hydrogen or



wherein R_5 is hydrogen and R_6 is hydrogen or a straight or branched chain alkyl having from 1 to 5 carbon atoms.

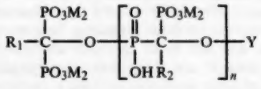
4,253,969

DEPOSIT CONTROL THROUGH THE USE OF OLIGOMERIC PHOSPHONIC ACID DERIVATIVES

Larry W. Becker, Wilmington, Del.; Philip S. Davis, Furlong, Pa., and Ian D. Morrison, Webster, N.Y., assignors to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 941,536, Sep. 11, 1978, Pat. No. 4,201,669.
This application Jul. 16, 1979, Ser. No. 57,879
Int. Cl.³ C02F *5/14*
U.S. Cl. 210—699 **13 Claims**

1. A method of dispersing iron hydroxide particulate matter contained in an aqueous medium, and thereby controlling the settling thereof on the structural parts of the system bearing said medium, which comprises adding to said system an effective amount for the purpose of a water soluble, chlorine-resistant, high calcium tolerance phosphonate having the formula



wherein R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to and including 13; Y is (i) a mixture of

with H and/or

and (ii) C_xH_{2x+1} where x is as above defined; M is a water soluble cation; and n is 1 or greater.

4,253,970

FLOCCULATION OF COALS WITH WATER-SOLUBLE STARCH XANTHATES

George G. Maher, Dunlap, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,733
Int. Cl.³ C02F *1/56*
U.S. Cl. 210—731 **6 Claims**

1. A method for flocculating coal from aqueous suspension with a water-soluble starch xanthate as the sole flocculant comprising the following steps:

a. adding to said coal suspension an effective amount of said water-soluble starch xanthate flocculant;

b. mixing said coal suspension containing said flocculant;

c. allowing said coal to flocculate from said suspension thereby forming a coal-enriched sediment phase and a coal-depleted aqueous phase wherein said phases are readily separable from one another; and

d. recovering said sediment phase from said aqueous phase.

4,253,971

WATER TREATMENT

Norman A. MacLeod, 82 Dawn Dr., Northcliff, Transvaal, and Charles P. N. Webb, 45 1st Ave., Illovo, Johannesburg, Transvaal, both of South Africa

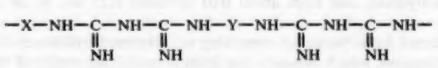
Continuation of Ser. No. 916,048, Jun. 14, 1978, abandoned. This application Oct. 2, 1979, Ser. No. 81,091

Claims priority, application South Africa, Jun. 14, 1977, 77/3557

Int. Cl.[3] C02F *1/72, 1/50*

U.S. Cl. 210—759 9 Claims

1. A method of controlling pathogenic organisms, fungi and algae in water which comprises the steps of applying to the water a primary reagent comprising a linear polymeric biguanide or a salt thereof which in its free base form has a recurring polymer unit represented by the formula



wherein X and Y represent bridging groups in which together the total number of carbon atoms directly interposed between the pairs of nitrogen atoms linked by X and Y is more than 9 and less than 17, followed by applying to the water an alkali metal perborate in tablet form to produce a back-up algicidal effect in the water, and which in the aqueous phase produces hydrogen peroxide.

4,253,972

FLAME RETARDANT POLYOLEFINS

Clifton T. Fleenor, Jr., Parkersburg, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 1, 1979, Ser. No. 80,765

Int. Cl.[3] C09K *3/28;* C08J *9/00*

U.S. Cl. 252—8.1 14 Claims

1. Polyolefin compositions comprising a polyolefin, an intumescent flame retardant additive selected from the group consisting of melammonium pentate, the pentate salt of ammelide, and mixtures thereof, and a polyhydric alcohol.

9. An intumescent composition adapted to render polyolefins flame retardant comprising a pentate salt of an amino-s-triazine and a polyhydric alcohol.

4,253,973

PHOSPHORUS-CONTAINING COMPOUNDS AND LUBRICANTS CONTAINING SAME

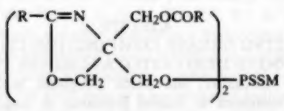
Andrew G. Horodysky, Cherry Hill, and Robert M. Gemmill, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 20, 1979, Ser. No. 96,115

Int. Cl.[3] C10M *1/48*

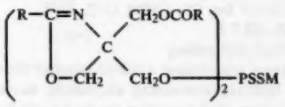
U.S. Cl. 252—46.7 17 Claims

1. A compound of the formula



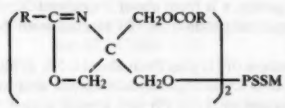
wherein M is the residue of a nitrogen-containing compound selected from the group consisting of (1) primary, secondary and tertiary amines containing 10 or more carbon atoms and (2) a polyalkyleneamine, an epoxide or an activated olefin selected from the group consisting of dienes, unsaturated aldehydes, vinylic esters, vinylic ethers, vinylic ketones, acrylonitrile and sulfurized olefins and R is a hydrocarbyl group containing from 9 to 49 carbon atoms.

9. A lubricant composition comprising a major proportion of a lubricant and a friction reducing or antiwear amount of a compound of the formula



wherein M is the residue of a nitrogen-containing compound selected from the group consisting of (1) primary, secondary and tertiary amines containing 10 or more carbon atoms and (2) a polyalkyleneamine, an epoxide or an activated olefin selected from the group consisting of dienes, unsaturated aldehydes, vinylic esters, vinylic ethers, vinylic ketones, acrylonitrile and sulfurized olefins and R is a hydrocarbyl group containing from 9 to 49 carbon atoms.

17. A method of reducing the fuel consumption of an internal combustion engine by lubricating said engine with a lubricating oil composition comprising a major proportion of a lubricating oil and a friction reducing amount of a compound of the formula



wherein M is the residue of a nitrogen-containing compound selected from the group consisting of (1) primary, secondary and tertiary amines containing 10 or more carbon atoms and (2) a polyalkyleneamine, an epoxide or an activated olefin selected from the group consisting of dienes, unsaturated aldehydes, vinylic esters, vinylic ethers, vinylic ketones, acrylonitrile and sulfurized olefins and R is a hydrocarbyl group containing from 9 to 49 carbon atoms.

4,253,974

OIL RECOVERY AND MOBILITY CONTROL IN SURFACTANT SYSTEMS USING THE REACTION PRODUCT OF AN ALKENYL SUCCINIC ANHYDRIDE AND A TERTIARY AMINE

Joseph J. Valcho, Naperville, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 827,567, Aug. 25, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,933

Int. Cl.[3] E21B *43/22*

U.S. Cl. 252—8.55 D 6 Claims

1. A method for recovering crude oil from a crude-oil bearing formation which comprises injecting into the formation an aqueous fluid to displace the oil in the formation comprising 1 to 15 wt.% based on the aqueous fluid of the reaction product, having both water and oil solubility, of an alkenyl succinic anhydride, wherein the alkenyl group has a molecular weight of about 100 to about 600, and about 0.7 to 1.3 equivalents of a tertiary amine of the formula

wherein each R_1 is independently selected from the group consisting of lower alkyls, hydroxy substituted lower alkyls and hydroxy substituted ethoxylated lower alkyls per equivalent of anhydride wherein the reaction product is both a surface active agent and a viscosity increasing agent.

4,253,975

AQUEOUS LUBRICANTS CONTAINING METAL HYDROCARBYL DITHIOPHOSPHATES

Derek A. Law; Robert H. Davis, both of Pitman, and Harry J. Andress, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 27, 1979, Ser. No. 70,280
Int. Cl.[3] C10M *1/32, 1/48*
U.S. Cl. 252—32.7 E 10 Claims

1. A product comprising

(1) a mixture comprising a dihydrocarbyl dithiophosphate and a hydroxyl-containing alkylamine having 2 to 100 carbon atoms or the reaction product made by reacting an alkenylsuccinic anhydride or acid wherein the alkenyl is derived from a mixture of C_{16} to C_{28} olefins with (A) a hydroxyl-containing tertiary amine having 2 to 100 carbon atoms, or (B) a hydroxypolyetheramine of the formula

$$R-N(R')-(CH_2CH_2O)_xH \quad \text{or}$$
$$R-N(R')-(CH_2CH_2CH_2O)_xH$$

wherein R and R′ are C_8 to C_{18} hydrocarbyl groups or R′ is a $-(CH_2CH_2O)_yH$ group and R is a C_8 to C_{18} hydrocarbyl group, x is from about 2 to about 50;

(2) the reaction product of (B) reacted with polyethylene glycol;

(3) the mixture of (1) plus from about 0.5% to about 15% by weight of a C_2 to C_{10} monocarboxylic acid, or

(4) the mixture of (1) or (2) plus a rosin soap.

4,253,976

MAGNESIUM OXIDE-CARBOXYLATE COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME

John W. Forsberg, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 882,511, Mar. 1, 1978, abandoned, which is a division of Ser. No. 760,315, Feb. 18, 1977, Pat. No. 4,094,801, which is a continuation-in-part of Ser. No. 681,627, Apr. 29, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,508
The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.
Int. Cl.[3] C10M *1/44, 1/24, 1/40, 1/48*
U.S. Cl. 252—33 19 Claims

1. A method for preparing a thixotropic noncarbonated magnesium-containing complex which comprises heating, at a temperature above about 30° C., a mixture comprising:

(A) at least one of magnesium hydroxide, magnesium oxide, hydrated magnesium oxide, and a magnesium alkoxide;

(B) At least one oleophilic organic reagent comprising a carboxylic acid, a mixture of a major amount thereof with a minor amount of a sulfonic acid or pentavalent phosphorus acid, or an ester or alkali metal or alkaline earth metal salt of either of these;

(C) Water, if necessary to convert a substantial proportion of component A to magnesium hydroxide or hydrated magnesium oxide; and

(D) At least one organic solubilizing agent for component B;

the ratio of equivalents of magnesium to the acid portion of component B being at least about 5:1, and the amount of water present, if any, being from 0.7 to 3.0 moles per gram-atom of magnesium in component A.

4,253,977

HYDRAULIC AUTOMATIC TRANSMISSION FLUID WITH SUPERIOR FRICTION PERFORMANCE

Rosemary O'Halloran, Union, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 22, 1978, Ser. No. 963,036
Int. Cl.[3] C10M *1/40, 1/54*
U.S. Cl. 252—33.4 11 Claims

1. An automatic transmission fluid composition that is useful as the working and lubricating fluid for a mechanical and hydraulic automatic transmission unit containing a wet clutch, which comprises a lubricating oil composition containing from about 0.02 to about 1 wt. % of a friction modifier selected from the group consisting of: an alkyl or alkenyl C_4 to C_{10} dicarboxylic acid having a total of from about 6 to about 30 carbon atoms in said straight chain alkyl group or alkenyl group, and the half ester reaction product of an aldehyde/tris hydroxymethyl aminomethane adduct with a long straight chain C_{10} to C_{30} hydrocarbyl-substituted C_4 to C_{10} dicarboxylic acid or anhydride; and from about 0.01 to about 0.25 wt. % of an overbased alkali metal or alkaline earth metal detergent selected from the group consisting of overbased sulfonates and phenates, which enhances the friction modifying action of the friction modifier and wherein the ratio of friction modifier to overbased salt is within the limits of about 1:10 to about 10:1.

8. A method for operation of an automotive automatic transmission that employs frictional coupling in contact with a lubricating fluid, which comprises operating said transmission with the composition defined by claim 1 serving as the said lubricating fluid.

4,253,978

PHOSPHORUS-CONTAINING COMPOUNDS AND LUBRICANTS CONTAINING SAME

Robert M. Gemmill, Jr., Pitman, and Andrew G. Horodysky, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,633
Int. Cl.[3] C10M *1/48*
U.S. Cl. 252—32.7 E 18 Claims

1. A compound obtained by reaction of one equivalent of a carboxylic acid of the formula

R—COOH

wherein R is a hydrocarbyl group containing 9 to 50 carbon atoms with tris (hydroxymethyl)aminomethane, reacting the resulting product with a phosphorus polysulfide and reacting the phosphorus-containing product with a metal-containing compound wherein the metal in said metal-containing compound is selected from Groups IIA, IIB, VIA or VIII of the Periodic Table.

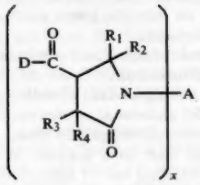
4,253,979

LUBRICATING GREASE COMPOSITION CONTAINING PYRROLIDONE DERIVATIVE AS GREASE THICKENER

A. Gordon Alexander, and Keith Coupland, both of Sarnia, Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 5, 1979, Ser. No. 9,742
Int. Cl.[3] C10M *3/30, 3/18, 7/34, 7/22*
U.S. Cl. 252—33.6 19 Claims

1. A lubricating grease composition comprising a lubricating oil and an effective amount of a pyrrolidone compound as a thickener, said pyrrolidone compound having the formula:



where x is 1 to 3, A is a hydrocarbyl group of 1 to 50 carbon atoms, D is an MO—

or R_7O— group where M is a metal selected from Group I or II of the Periodic Table or aluminum, R_5 and R_6 are each a hydrocarbyl group of 1 to 50 carbon atoms and one may be hydrogen, R_7 is a hydrocarbyl group of 1 to 50 carbon atoms or hydrogen with the proviso that there is at least one long chain hydrocarbon group of at least 12 carbon atoms present in either D or A, and R_1, R_2, R_3 and R_4 are hydrogen or an alkyl group of 1 to 6 carbon atoms.

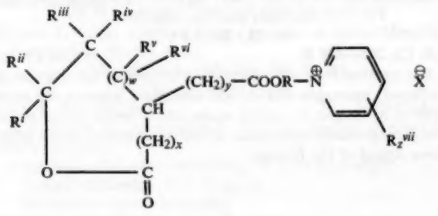
4,253,980

QUATERNARY AMMONIUM SALT OF ESTER-LACTONE AND HYDROCARBON OIL CONTAINING SAME

Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

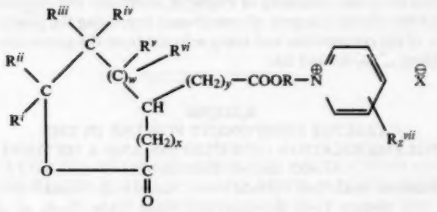
Filed Jun. 28, 1979, Ser. No. 53,011
Int. Cl.³ C07D *405/12*; C10M *5/20*
U.S. Cl. 252—34 **28 Claims**

1. A quaternary ammonium salt of an esterlactone represented by the formula:



in which w represents 0 or 1, x and y alternately represent 0 and 1, z has value from 0 to 2, R^i, R^{ii}, R^{iii}, R^{iv}, R^v and R^{vi}, represent hydrogen, a methyl radical or a hydrocarbyl radical of 50–200 carbon atoms only one of which is said hydrocarbyl radical, R is a divalent hydrocarbon radical having from 2–10 carbon atoms, R^{vii} is hydrogen or a hydrocarbyl radical having from 1 to 3 carbon atoms, and X is an anion selected from the group consisting of halide, sulfate, carbonate, sulfite, borate, carboxylate, and phosphate.

15. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium salt of an ester-lactone represented by the formula:



in which w represents 0 or 1, x and y alternately represent 0 and 1, z has value from 0 to 2, R^i, R^{ii}, R^{iii}, R^{iv}, R^v and R^{vi}, represent hydrogen, a methyl radical, or a hydrocarbyl radical of 50–200 carbon atoms only one of which is said hydrocarbyl radical, R is a divalent hydrocarbon radical having from 2–10 carbon atoms, R^{vii} is hydrogen or a hydrocarbyl radical, having from 1 to 3 carbon atoms and X is an anion selected from the group consisting of halide, sulfate, carbonate, sulfite, borate, carboxylate, and phosphate anions.

4,253,981

VISCOUS LUBRICANT COMPOSITION COMPRISING MIXED ESTERS AND A SILICONE OIL

Peter J. Ayres, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,666
Int. Cl.³ C10M *1/10*
U.S. Cl. 252—49.6 **1 Claim**

1. A composition comprising (a) a mixture of diisopropyl adipate 20% and purcellin oil 59.5–64.5%; (b) glyceryl tribehenate 5–15%; (c) silicone oil of viscosity 5–1000 cps 2.5–10% and (d) a surfactant comprising 88% sorbitan monooleate and 12% sorbitan trioleate 0.2–1.5%.

4,253,982

LUBRICANT COMPOSITIONS

Robert F. Bridger, and Kirk D. Schmitt, both of Hopewell, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 1, 1975, Ser. No. 600,984
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 R **14 Claims**

1. A lubricant composition comprising an oil of lubricating viscosity or grease prepared therefrom containing a minor antiwear improving amount of a bis-oxazoline having an alkyl group containing from 4 to 24 carbon atoms wherein said bis-oxazoline is obtained by reacting tris(hydroxymethyl) aminomethane with an alkylsuccinic anhydride, having from 4 to 24 carbon atoms in the alkyl group, in a mole ratio of from about 0.5:1 to about 2:1.

11. A bis-oxazoline prepared by reacting tris(hydroxymethyl)aminomethane with an alkylsuccinic anhydride, having from 4 to 24 carbon atoms in the alkyl group, in a mole ratio of from about 0.5:1 to about 2:1.

4,253,983

PARAFFIN COMPOSITIONS HAVING IMPROVED HEAT RESERVOIR

Marie J. M. P. Blanie, 282, rue Saint-Jacques, 75005 Paris, France

Filed Mar. 16, 1978, Ser. No. 887,399
Int. Cl.³ C09K *5/06*
U.S. Cl. 252—70 **13 Claims**

1. A paraffin composition that can be used as a shapable heat casing constituent, which is solid at 40° C., and has an improved heat reservoir by virtue of being combined with inert solid material, comprising from 45 to 65% by weight of paraffin and from 35 to 55% by weight of at least two categories of constituents, the first category of constituents improving the

thermal conductivity of the composition and being selected from the group consisting of magnesia, aluminum and alumina, and the second category of constituents improving the plasticity of the composition and being selected from the group consisting of kaolin and talc.

4,253,984

CATALYST COMPONENT FOR USE IN THE POLYMERIZATION OF α-OLEFINS AND A METHOD OF USING THE SAME

Masafumi Imai, Ooi; Hiroshi Ueno, Namekawa; Naomi Inaba, Ooi; Makoto Yoda, Kawagoe, and Shozo Wada, Zushi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,791
Claims priority, application Japan, Jul. 28, 1978, 53/91536
Int. Cl.³ C08F *4/02, 4/64*
U.S. Cl. 252—429 B **26 Claims**

1. A titanium-containing solid catalyst component for use in the polymerization of α-olefins, which is produced by a process comprising:

(a) adding an organo aluminum catalyst component selected from organo aluminum compounds and mixtures of organo aluminum compounds and electron donative compounds to a supported titanium (IV) halide on a magnesium halide;

(b) subjecting the mixture to a mechanical grinding treatment in the presence of an ethylenically unsaturated hydrocarbon until the intensity of magnesium halide x-ray diffraction peak at 14.8° is dull and the intensity of the 30.2° peak is reduced; and

(c) recovering the resulting titanium-containing solid catalyst component.

4,253,985

PROCESS FOR HANDLING AND SOLIDIFICATION OF RADIOACTIVE WASTES FROM PRESSURIZED WATER REACTORS

Harold E. Filter, Midland, and Keith Roberson, Freeland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 17, 1979, Ser. No. 4,099
Int. Cl.³ G21F *9/16, 9/20*
U.S. Cl. 252—301.1 W **8 Claims**

1. A method of solidifying evaporator bottoms or other wastes generated in the cleanup of nuclear reactor cooling waters prior to recirculation to the reactor, said wastes comprising aqueous radioactive solutions containing borates which are precipitatable in the ambient temperature range, said method comprising the combined steps of treating the aqueous wastes by admixing therewith one or more of the group of alkali metal hydroxides, ammonium hydroxide, and non-detrimentally substituted ammonium hydroxides in an amount effective to produce soluble borate salts in the ambient temperature range, bringing the aqueous wastes to a temperature within the ambient temperature range, admixing the wastes with a polymerizable liquid binder material, thereafter polymerizing said liquid binder in situ with such wastes admixed therewith to prepare a solid binder/waste matrix.

4,253,986

AMMONIA SYNTHESIS GAS PRODUCTION

Talmage D. McMinn, Jr., Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 24, 1979, Ser. No. 69,942
Int. Cl.³ C10K *1/02*
U.S. Cl. 252—373 **15 Claims**

1. A continuous process for the gasification of solid carbonaceous materials in a fluidized bed system comprising a lower elutriation/fluidization zone and an upper gasifier zone and an associated riser-burner zone which comprises:

(a) introducing particulate solid carbonaceous material and steam into the lower portion of said gasifier zone,

(b) introducing air into the lower portion of said elutriation/fluidization zone,

(c) entraining and fluidizing said particulate solid carbonaceous material in said air,

(d) introducing a finely-divided chemically inert, thermally refractory solid material at an elevated temperature into the upper portion of said gasifier zone,

(e) allowing said inert solid material to flow downward through said fluidized bed of solid carbonaceous carbon material in said gasifier zone,

(f) maintaining said gasifier zone under conditions so that said carbonaceous material, steam and air are endothermically reacted to a mixture of carbon monoxide, hydrogen and nitrogen,

(g) said inert solid material being the source of heat for said endothermic reaction,

(h) withdrawing a gaseous effluent comprising carbon monoxide, hydrogen and nitrogen from the upper portion of said gasifier zone,

(i) separating said inert solid material from said solid carbonaceous material in said elutriation/fluidization zone,

(j) withdrawing said separated inert solid material from said elutriation/fluidization zone and removing ash containing particles therefrom,

(k) introducing said separated ash poor inert solid material into the lower portion of said riser-burner zone,

(l) introducing air and fuel to the lower portion of said riser-burner zone,

(m) maintaining exothermic conditions by burning said fuel in said riser-burner zone to heat said ash poor inert solid material to an elevated temperature sufficient to effect gasification of said solid carbonaceous material in said gasifier zone, and

(n) withdrawing said heated inert ash poor solid material from said riser-burner zone and reintroducing it into said gasification zone.

4,253,987

HOMOLOGATION PROCESS FOR THE PRODUCTION OF ETHANOL FROM METHANOL

Rocco A. Fiato, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 91,241, Nov. 15, 1979. This application Apr. 10, 1980, Ser. No. 138,999
Int. Cl.³ B01J *31/24*
U.S. Cl. 252—429 R **10 Claims**

1. A catalyst for the production of ethanol by the reaction of methanol, hydrogen and carbon monoxide wherein the mole ratio of hydrogen to carbon monoxide is about 2:1 or more; comprising cobalt, ruthenium, an iodine promoter, and a phosphine ligand of the furmula

wherein P is phosphorous and R_1, R_2 and R_3 when taken individually are monovalent alkyl having from 1 to 20 carbon atoms; aryl, aralkyl or alkaryl having from 6 to 10 ring carbon atoms; cycloalkyl, having from 5 to 8 carbon atoms; and when any two taken together are a divalent alkylene having from 2 to 6 carbon atoms; wherein the mole ratio of said phosphine ligand to total halide is from 1:0.36 to 1:5 and the mole ratio of said phosphine ligand to said cobalt exceeds 1.5:1.

8. The catalyst as claimed in claim **1** wherein the said ruthenium is ruthenium trichloride.

4,253,988

CONDITIONING PHOSPHORUS-VANADIUM-OXYGEN CATALYST

Rannon A. Mount, and Warn D. Robinson, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 26, 1979, Ser. No. 88,711
Int. Cl.[3] B01J *27/14*
U.S. Cl. 252—435 20 Claims

1. In a process for preparing phosphorus-vanadium-oxygen complex catalysts having a phosphorus to vanadium atom ratio in the range of about 1:2 to about 2:1, the process comprising:
(a) contacting vanadium and phosphorus compounds under conditions which will provide a catalyst precursor wherein greater than 50 atom % of the vanadium is in the tetravalent state;
(b) recovering the catalyst precursor;
(c) forming the catalyst precursor into agglomerates; and
(d) calcining the catalyst precursor agglomerations at a temperature between about 300° C. and 600° C.,
the improvement comprising wetting the catalyst precursor with an aqueous liquid in an amount sufficient to enhance surface adhesion prior to calcining and then drying the catalyst precursor whereby attrition is substantially reduced.

4,253,989

ZEOLITIC CATALYST AND METHOD OF PRODUCING SAME

John Lim, Anaheim, and Ralph M. Haney, Woodland Hills, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Filed Apr. 14, 1978, Ser. No. 896,318
Int. Cl.[3] B01J *29/08*
U.S. Cl. 252—455 Z 10 Claims

1. A hydrocarbon conversion catalyst comprising a zeolite of the faujasite type, clay, alumina, and sodium silicate, the silicate expressed as SiO_2 being in the range of about 0.5% to about 3.5% based on the composite catalyst, on a volatile free basis, the sodium content of the catalyst being less than 1% of the catalyst on a volatile free basis.

7. A process of preparing a catalyst which comprises mixing in water, a zeolite of the faujasite type, clay, pseudoboehmite and sodium silicate said sodium silicate being in an amount equivalent to SiO_2 in the range of about 0.5% to about 3.5% based on the composite catalyst on a volatile free basis and spray drying said slurry.

4,253,990

PREPARATION METHOD FOR CATALYST SUPPORTS AND MATERIALS PRODUCED THEREBY

Stephen E. Gross, Littleton, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 11, 1979, Ser. No. 74,284
Int. Cl.[3] B01J *21/12*
U.S. Cl. 252—455 R 20 Claims

1. A process for the formation of a siliceous catalyst support which comprises:
a. forming a mixture comprising, in parts by weight:
natural diatomite—8 to 12 parts
bentonite clay—4 to 6 parts
silica—4 to 6 parts
cellulose fiber—1.5 to 2.5 parts
corn meal—1.5 to 2.5 parts
and sufficient water to impart an extrudable consistency;
b. extruding the mixture through a die to form an extrudate and then separating the extrudate into a plurality of pellets;
c. drying the pellets for at least 20 minutes at a temperature of at least 180° F., with the time and temperature being selected such that the corn meal and cellulose fiber are substantially completely dried; and
d. calcining the dried pellets at a temperature of at least about 1200° F. for at least about 30 minutes, until the corn meal and cellulose fiber are substantially completely removed from the pellets leaving a highly porous solid composite pellet of natural diatomite, bentonite clay and silica.

4,253,991

FLUIDIZED-BED CATALYSTS FOR PRODUCTION OF SYNTHETIC NATURAL GAS BY METHANIZATION OF CARBON MONOXIDE

Karl-Heinz Kanzler, deceased, late of Germering, Fed. Rep. of Germany (by Sigrid Kanzler, heiress), and Karl Kochloefl, Moosburg, Fed. Rep. of Germany, assignors to Süd-Chemie Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,428
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2816035
Int. Cl.[3] B10J *21/04;* B01J *21/12, 21/08, 23/78*
U.S. Cl. 252—455 R 14 Claims

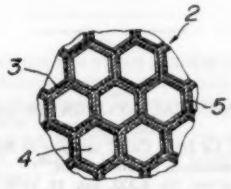
1. A fluidized-bed catalyst for the production of synthetic natural gas by the methanization of carbon monoxide which catalyst in the unreduced state contains nickel oxide or nickel oxide on a carrier material resistant to temperature changes, and a hydraulic cement, said catalyst obtainable by compressing a composition comprising nickel oxide or a carrier material and nickel oxide in admixture with hydraulic cement as binder in the wetted condition at a pressure above 1600 kp/cm^2 into a formed body, calcining the so-compressed formed body, curing the so-calcined formed body by treatment with water or steam, recalcining the so-cured formed body and comminuting the same and recovering a comminuted material having a particle size fraction ranging from 40 to 350μ.

4,253,992

CERAMIC HONEYCOMB COMPOSITE STRUCTURE, CATALYST SUPPORTED THEREBY AND METHOD OF PRODUCING THE SAME

Shigeo Soejima, and Noboru Yamamoto, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya City, Japan

Continuation of Ser. No. 516,790, Oct. 21, 1974, abandoned. This application Jan. 3, 1978, Ser. No. 866,765
Claims priority, application Japan, Oct. 3, 1974, 49/113304
Int. Cl.[3] B01J *35/04, 35/10;* F01N *3/15, 3/16*
U.S. Cl. 252—477 R 8 Claims



1. A catalyst comprising a honeycomb structure body having a multiplicity of parallel channels separated by thin walls, ceramic grains layers the surfaces of which contain pores and the sum of volumes of the pores, having a diameter of at least 5 microns, is 0.1 to 0.6 cm^3/g integrally provided at least on said walls, active material layers provided on said ceramic grains layers and catalytic component applied to said active material layers.

4,253,993

SHAMPOO IN FLAKE FORM

James C. Ramsey, III, and Philip J. Schoner, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 18, 1979, Ser. No. 40,347
Claims priority, application Philippines, May 29, 1978, 21205
Int. Cl.[3] C11D *1/14, 17/06*
U.S. Cl. 252—548 22 Claims

1. A shampoo composition comprising, in percentages by weight based on the total composition, from 40% to 60% sodium alkyl sulfate wherein the alkyl moiety has 12 or 14 carbon atoms; from 2% to 5% alkyl monoethanol amide wherein the alkyl moiety has 12 or 14 carbon atoms; from 20% to 50% sodium sulfate; and from 1% to 7% water;

wherein said composition is in the form of flakes having a thickness of from 0.070 mm. to 0.340 mm. and a bulk density from 0.28 gm./cc. to 0.44 gm./cc.; and

wherein said flakes are prepared by processing a slurry containing the aforesaid components and having a moisture content of from 45% to 75% by weight of the slurry.

4,253,994

WATER-BASED ANTI-BLEMISH PAINT

Moneeb Zakaria, LaGrange, and Manuel Slovinsky, Woodridge, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 894,779, Apr. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 732,260, Oct. 14, 1976, abandoned. This application Jan. 11, 1979, Ser. No. 2,484
Int. Cl.[3] C08L *9/10*
U.S. Cl. 260—5 2 Claims

1. A water-based anti-blemish paint composition consisting essentially of:

Ingredients	% By Weight
Water	65–85
Surfactant	0.1–2.0
Carbon black	10–25
Particulate lubricant	1–8
Aqueous latex containing 15–80% by weight of particles selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof	2–10

4,253,995

IMMUNOCHEMICAL CONJUGATES: METHOD AND COMPOSITION

David H. Katz, La Jolla, Calif., assignor to Scripps Clinic and Research Foundation, La Jolla, Calif.

Division of Ser. No. 4,333, Jan. 18, 1979, which is a continuation-in-part of Ser. No. 764,586, Feb. 2, 1977, Pat. No. 4,191,668. This application Feb. 11, 1980, Ser. No. 120,068
Int. Cl.[3] C08L *77/04, 89/00;* A61K *37/02, 37/26*
U.S. Cl. 260—6 3 Claims

1. The method of purifying conjugate of D-glutamic acid-D-lysine copolymer and protein comprising reacting said copolymer with biotin before forming said conjugate and, after formation of said conjugate, separating said conjugate from non-conjugated protein by affinity chromatography on an avidin-Sepharose chromatographic column.

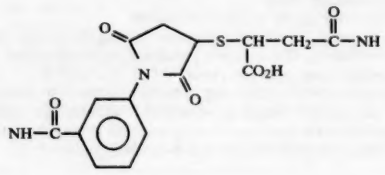
4,253,996

IMMUNOCHEMICAL CONJUGATES: METHOD AND COMPOSITION

David H. Katz, La Jolla, Calif., assignor to Scripps Clinic and Research Foundation, La Jolla, Calif.

Division of Ser. No. 4,333, Jan. 18, 1979, Pat. No. 4,220,565, which is a continuation-in-part of Ser. No. 764,586, Feb. 2, 1977, Pat. No. 4,191,668. This application Feb. 13, 1980, Ser. No. 120,988
Int. Cl.[3] A61K *37/02, 37/26;* C08L *77/04, 89/00*
U.S. Cl. 260—6 4 Claims

1. Conjugate of D-glutamic acid-D-lysine copolymer with protein wherein the conjugating link is



4,253,997

ANTI-OVULATORY DECAPEPTIDES

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,599
Int. Cl.[3] C08L *37/00;* C07C *103/52*
U.S. Cl. 260—8 11 Claims

1. A compound of the formula:

D-p-Glu-D-Phe-D-Nal(1)-Ser-Tyr-X-Leu-Arg-Pro-Gly-NH_2

in which

X is D-Nal(1), D-Trp, D-Phe, D-Tyr, D-Lys, D-Met, D-Ala or D-Pgl

and pharmaceutically acceptable salts thereof.

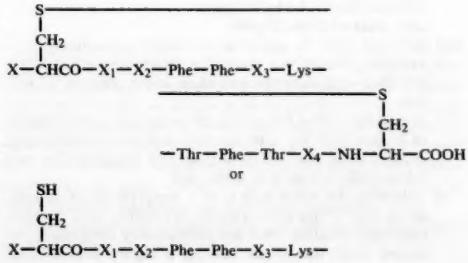
4,253,998

PEPTIDES RELATED TO SOMATOSTATIN

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 899,438, Apr. 24, 1978, abandoned. This application Mar. 9, 1979, Ser. No. 19,216
Int. Cl.[2] C08L *37/00;* C07C *103/52;* A61K *37/00*
U.S. Cl. 260—8 9 Claims

1. A compound of the formula:



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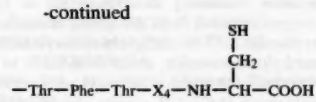


wherein:

X is H, —NH_2, —NH-Gly-Ala, —NH-D-Ala-Ala, —NH-Gly-Gly-Gly, —NH-acetyl, or —NH-benzoyl;

X_1 is His or Arg;

X_2 is His, Glu, Tyr;

X_3 is Trp, D-Trp, or 6-F-D-Trp; and

X_4 is D-Tyr or D-Ser;

or a non-toxic, pharmaceutically acceptable acid addition salt thereof.

4,253,999

AGENT FOR PROTECTING THE SURFACE OF LITHOGRAPHIC PRINTING PLATE COMPRISING A PLASTICIZER CONTAINING OIL PHASE AND A SURFACTANT AND A HYDROPHILIC HIGH MOLECULAR WEIGHT COMPOUND CONTAINING AQUEOUS PHASE

Yoshio Okishi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 25, 1979, Ser. No. 52,048

Claims priority, application Japan, Jun. 23, 1978, 53-76164

Int. Cl.³ C08L *3/02, 5/04, 5/00*

U.S. Cl. 260—17 R **73 Claims**

1. In an agent for protecting the surface of a lithograpic printing plate which is an emulsion comprising an oil phase comprising a surfactant, and an aqueous phase having dissolved therein a hydrophilic high molecular compound, the improvement wherein said oil phase further comprises a plasticizer having a solidifying point of 15° C. or less, which is present in an amount of from about 0.1 to at 10 wt% based on the total amount of said agent.

4,254,000

EPOXY RESIN COMPOSITION

Akira Ohmori, and Masayoshi Shinjo, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

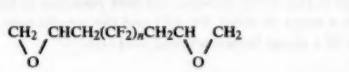
Filed Oct. 26, 1979, Ser. No. 88,816

Claims priority, application Japan, Oct. 27, 1978, 53-132859

Int. Cl.³ C08G *59/30;* **C08L** *63/00*

U.S. Cl. 260—18 PN **3 Claims**

1. An epoxy resin composition which comprises (1) an epoxy resin represented by the formula:



wherein n is an integer of 4 to 18 and (2) at least one of an initial condensation product of amino resin, an initial condensation product of amide resin and an initial condensation product of phenol-formaldehyde.

4,254,001

RANDOM ELASTOMERIC COPOLYESTERS

William C. T. Tung, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 40,016, May 17, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 116,703

Int. Cl.³ C08G *63/66, 63/18*

U.S. Cl. 260—22 D **6 Claims**

1. As compositions of matter, elastomeric, random, linear copolyesters having intrinsic viscosities ranging from about 0.6 to about 1.0 as determined in a 60/40 by volume mixed solvent system of phenol and tetrachloroethane at 30° C. and melting points ranging from about 180° C. to about 220° C., said copolyester comprising the polymeric reaction product of a mixture of reactants consisting of

(a) terephthalic acid or a lower C_1–C_4 dialkyl ester thereof,

(b) dimer acid,

(c) a poly(tetramethylene oxide)glycol having a molecular weight ranging from about 1000 to about 2000 and

(d) 1,4-butane diol

in which mixture the amount of terephthalic acid or lower C_1–C_4 dialkyl ester thereof ranges from about 99.9 to about 85.0 mole percent and the amount of dimer acid ranges from about 0.1 to about 15.0 mole percent, said percentages being based on the total number of moles of said acid constituents or reactive equivalents thereof in said mixture and in which mixture the amount of poly(tetramethylene oxide)glycol ranges from about 2.0 to 12.0 mole percent and the amount of 1,4-butane diol ranges from about 98.0 to about 88.0 mole percent, plus a molar excess of said 1,4-butane diol ranging from about 5.0 to about 120 percent, said mole percentages being based on the total number of moles of said glycols, less the molar excess of the 1,4-butane diol, in said mixture.

4,254,002

TOUGH PLASTICS BASED ON CASTOR OIL ELASTOMER-REINFORCED VINYL POLYMERS

L. H. Sperling, 1134 W. Market St., Bethlehem, Pa. 18015; J. A. Manson, 1320 Sycamore St., Bethlehem, Pa. 18017, and N. Devia-Manjarres, Calle 8 Sur 15-39, Bogota, Colombia

Filed Feb. 21, 1979, Ser. No. 13,030

Int. Cl.³ C08L *91/00*

U.S. Cl. 260—23 ST **14 Claims**

1. A method for producing a formed castor oil elastomeric-reinforced polyvinyl plastic product which comprises heating a mixture consisting of (a) 5–15% by weight of a castor oil elastomer prepolymer and catalyst therefor said prepolymer selected from the group consisting of a caster oil-multibasic acid polyester and a multifunctional isocyanate and copolymers thereof, and (b) 95–85% of a vinyl, plastic forming monomer selected from the group consisting of methyl methacrylate and homologues, styrene and derivatives and vinyl chloride and homologues, together with a multivinyl crosslinking monomer therefor to a temperature sufficiently high to initiate polymerization of said vinyl but not sufficiently high to polymerize said castor oil elastomer prepolymer, stirring said mixture at said temperature until said vinyl is polymerized sufficiently to form a separate phase and to become a continuous separate phase, but before said composition begins to gel due to crosslinking of said vinyl, then forming the reacting mixture to final product shape and holding said formed product at said elevated temperature for at least an hour, after which it is heated to a second elevated temperature sufficiently high to completely polymerize said castor oil elastomer prepolymer and holding said product at said temperature until said reaction is complete.

4,254,003

AQUEOUS POLYMER DISPERSION

Susan M. Fox, Cheltenham, and David V. Gibson, N. Bayswater, both of Australia, assignors to Dulux Australia Ltd., Melbourne, Australia

Filed Jul. 28, 1978, Ser. No. 929,183

Claims priority, application Australia, Aug. 15, 1977, PD1234; Jun. 6, 1978, PD4615

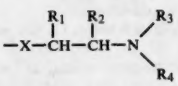
Int. Cl.³ C08L *71/02*

U.S. Cl. 260—29.6 NR **8 Claims**

1. An aqueous dispersion of particles of at least one film-forming addition polymer of α,β-ethylenically unsaturated monomer at least one of which polymers comprises a proportion of polar groups selected from amine, ureido and thioureido groups, the said polar groups being non-reactive with respect to the film-forming process, and characterized in that

(a) the polar groups are chosen as follows:

(i) the amine groups correspond to the general formula:



where

R_1, R_2 are H, CH_3 or OH

R_3, R_4 are H or C_1-C_4 alkyl or hydroxy-alkyl groups and X is oxygen;

(ii) the ureido or thioureido groups are such that the solubility in water of a compound consisting of such a group attached directly to a methacryl group is at least 1% by weight at 25° C.

(b) at least one of said at least one film-forming addition polymer additionally comprises poly (alkylene oxide) chains comprising on average at least four ethylene oxide units, which are soluble in water and attached to the polymer by covalent bonds;

(c) there is present in the disperse polymer particles at least 0.2% by weight of the total film-forming polymer of poly (alkylene oxide) chains and at least 0.1% by weight of the total film-forming polymer of polar groups; and

(d) the combined weights of the poly (alkylene oxide) chains and the polar groups comprise from 0.4 to 9.0% by weight of the total film-forming polymer.

4,254,004

EMULSION PROCESS FOR POLYMER PARTICLES

Kirk J. Abbey, Cleveland, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed May 9, 1979, Ser. No. 37,389

Int. Cl.³ C08F *2/18*

U.S. Cl. 260—29.6 R **4 Claims**

1. In an emulsion process for polymerizing ethylenically unsaturated monomers in an aqueous reaction medium to provide stabilized latex polymer particles having an average number weight particle size between about 0.05 and 1 micron, the improvement comprising:

polymerizing an initial charge of said monomers of between 2% and 20% by weight of the total monomers in said aqueous reaction medium to provide pre-reacted polymer seed particles;

reacting a first monomer feed of between about 10% and 40% by weight of the total monomers by feeding said first monomers to the aqueous reaction medium at a feed rate faster than the monomer polymerization rate of said first monomers until the onset of the Trommsdorff gel exotherm effect;

reacting the remaining weight of said total monomers by feeding said remaining monomers to the aqueous reaction mixture at a feed rate slower than the polymerization rate of said monomers to provide a bimodal in-situ blend of polymer particles wherein the larger modal of polymer particles is between about 1.1 and 6 times the size of the smaller modal of polymer particles.

4,254,005

ABRASION RESISTANCE AND STRENGTH OF COTTON-CONTAINING FABRIC MADE RESILIENT WITH N-METHYLOLACRYLAMIDE-TYPE REAGENT

Stanley P. Rowland; Florine A. Blouin, both of New Orleans, and Frederick F. Shih, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 8,129, Jan. 31, 1979. This application Feb. 6, 1980, Ser. No. 118,948

Int. Cl.³ C08L *61/22*

U.S. Cl. 260—29.6 H **1 Claim**

1. A chemical composition for imparting to cellulosic textiles high levels of resilience together with retention of high levels of abrasion resistance, breaking strength, and tearing strength, the composition comprising 4% to 50% aqueous solution containing about from 4% to 25% of N-methylol reagent selected from the group consisting of N-methylolacrylamide, N-methylolmethacrylamide, and N-methylolitaconamide; about from 0.2% to 4.0% of an acidic water-soluble initiator for vinyl polymerization of monomers containing $H_2C{=}CH-$ units, the initiator selected from the group consisting of ammonium or alkali metal persulfates; and about from 0.1% to 4.0% of an alkali metal phosphate or combination of phosphates selected from the group consisting of

disodium hydrogen phosphate,
dipotassium dihydrogen phosphate, and
potassium dihydrogen phosphate, and
sodium dihydrogen phosphate.

4,254,006

ADHESION OF VINYL PLASTISOL COATINGS

Richard E. Robertson, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 12, 1977, Ser. No. 824,025

Int. Cl.³ C08K *5/12*

U.S. Cl. 260—31.8 M **2 Claims**

1. A method for adhering a vinyl dispersion coating to a hydrophilic substrate wherein at least a portion of the coating comprises a layer up to 20 mils in thickness, comprising applying to the substrate a composition comprising:

(A) about 10–40 parts by weight particulate vinyl chloride homopolymer, copolymer or mixture thereof dispersion resin having a majority of particles with diameters below about 10 microns;

(B) about 5–80 parts by weight liquid plasticizer;

(C) about 1–20 parts by weight of adhesion promotor consisting essentially of:

(i) thermoplastic phenol-formaldehyde condensate made having an excess number of moles of the phenol per mole of formaldehyde and having a number average molecular weight between about 500–5000;

(ii) a compound that produces low molecular weight difunctional linking moieties with heat selected from the group consisting of hexamethylenetetramine, adducts of hexamethylenetetramine, paraformaldehyde, paraaldehyde and adducts of formaldehyde,

wherein the ratio of moles of the linking moieties produced by (ii) to the moles of ortho and para positions to hydroxy in (i) is in a range of about 3:4–10:1 and the weight ratio of (A) to (C) is in a range between about 40:1–1:1.

4,254,007

ELECTRICAL INSULATING COMPOSITION

Ralph G. Flowers, and William A. Fessler, both of Pittsfield, Mass., assignors to General Electric Company, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,077

Int. Cl.³ C08L *29/04*

U.S. Cl. 260—33.4 P **13 Claims**

1. An electrically insulating wire coating enamel consisting essentially of a mixture of polyvinylacetal resin and phenolic resin and including from 0.15 to 1.9 percent by weight of an inner complex salt which comprises a bidentate chelating agent having one acid and one coordinating group wherein the chelating agent includes a metal having a coordination number equal to twice the principle valence of the metal.

4,254,008

CROSSLINKED ACRYLAMIDE POLYMER COMPOSITIONS AND SHAPED ARTICLES THEREFROM

George Krsek, Culver, Ind., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 974,007, Dec. 28, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,021

Int. Cl.[3] C08K 5/05

U.S. Cl. 260—33.4 R 10 Claims

1. A shaped polymeric product suitable for application to human skin made from a composition which comprises a water-dispersible acrylamide polymer; a quantity, rendering the composition soft and elastomeric, of a solvating water-miscible polyol, or mixture of polyols, containing water; and a polyaldehyde capable of crosslinking the acrylamide polymer; said polymeric product being treated at a temperature and time sufficient to substantially crosslink and water insolubilize the acrylamide polymer.

4,254,009

BINDING AGENT FOR COATING COMPOSITIONS HAVING A LONG SHELF LIFE

Werner Dittrich, Rheinfelden-Herten; Heinz Nestler, Troisdorf-Eschmar, and Friedhelm Schnippering, Siegburg-Braschoss, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 14, 1977, Ser. No. 851,572

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2654036

Int. Cl.[3] C08L 67/00

U.S. Cl. 260—40 R 26 Claims

1. A binder composition for use in a pigmentous or resinous composition comprising an unhydrolyzed silicic acid ester containing an alkoxyalkyl group of the formula

$$Si(OR')_n(OR'')_{4-n}$$

wherein n is any value between 1 and 3, R′ represents an alkyl moiety of 1 to 8 carbon atoms, R″ represents an alkoxy alkyl moiety of the formula $-(CH_2)_n-O-R'''$ wherein n is a number between 1 and 4 and R‴ is an alkyl moiety of 1 to 8 carbon atoms or an oligomeric silicic acid ester thereof having 2 to 10 silicon atoms, said binder composition containing up to 20% by weight resin.

4,254,010

GLASS FIBER-REINFORCED RESIN COMPOSITION

Shioji Mizuno, Osaka, and Tsuneyuki Adachi, Nara, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,359

Claims priority, application Japan, Apr. 6, 1978, 53-39728

Int. Cl.[3] C08K 3/40

U.S. Cl. 260—40 TN 17 Claims

1. A glass fiber-reinforced thermoplastic resin composition comprising

(I) a thermoplastic polyurethane derived from hydroxyl-terminated polybutylene terephthalate having an intrinsic viscosity of 0.2 to 0.6 and a polyfunctional isocyanate, and

(II) glass fibers coated with 0.05 to 3% by weight of an aminosilane or an epoxysilane and having a length of 0.01 mm to 0.2 mm and a length-to-diameter ratio of from 1.5 to 20.

4,254,011

FLAME RETARDED POLYETHYLENE TEREPHTHALATE COMPOSITIONS WITH IMPROVED DRIP SUPPRESSION

Peter Bier, New Martinsville, W. Va., assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 19, 1979, Ser. No. 95,273

Int. Cl.[3] C08L 67/00

U.S. Cl. 260—40 R 8 Claims

2. A thermoplastic composition comprising

(a) a polyethylene terephthalate having an intrinsic viscosity of at least 0.3 dl/g measured as a 0.5%, by weight, solution in a 1:1 mixture of phenol and tetrachloroethane at 25° C.,

(b) from 2 to 30%, by weight, based on component (a), of a multiphase composite interpolymer comprising

(i) from about 25 to 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8%, by weight, C_1 to C_6 alkylacrylate, 0.1 to 5%, by weight, crosslinking monomer, 0.1 to 5%, by weight, graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(ii) from about 75 to 5 weight percent of a final, rigid thermoplastic phase which is polymerized in the presence of said elastomeric hase and which is free of epoxy groups;

(c) from 3 to 20%, by weight, based on component (a) of a fire retardant, and

(d) from 0 to 50%, by weight, based on component (a) of glass fibers.

4,254,012

REINFORCED COMPOSITES CONTAINING CYANATO RESINS

George E. Green, Stapleford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 910,558, May 30, 1978, abandoned. This application Sep. 12, 1979, Ser. No. 75,288

Claims priority, application United Kingdom, Jun. 1, 1977, 23175/77

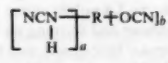
Int. Cl.[3] C08K 7/14

U.S. Cl. 260—42.18 20 Claims

1. Thermosettable composites consisting of

(a) a fibrous reinforcing material,

(b) a cyanato resin of the general formula



I

where

R is an aliphatic, cycloaliphatic, or an aromatic organic group of not more than 18 carbon atoms,

a is zero, or, if R is an aromatic group, may alternatively be an integer of 1 to 3, and

b is an integer of 1 to 6 such that (a+b) is at least 2, and

(c) a photopolymerised compound.

4,254,013

GREEN STRENGTH OF ELASTOMER BLENDS

Emil M. Friedman, Fairlawn, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 835,562, Sep. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 698,385, Jun. 21, 1976, abandoned. This application Mar. 15,.1979, Ser. No. 20,790

Int. Cl.[3] C08K *3/20;* **C08L** *47/00*

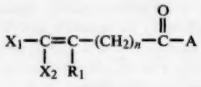
U.S. Cl. 260—42.47 **25 Claims**

1. A prevulcanization process for preparing an elastomer blend for use in making tires or tire components, comprising:

improving the prevulcanization of green strength of blends of (a) synthetic elastomers and (b) synthetic or natural cis-1,4-polyisoprene by

adding an amount of an ionogenic compound to synthetic elastomer-forming monomers before polymerizing such that the amount of said ionogenic compound incorporated in said synthetic elastomer after polymerization ranges from about 8 to 58 milliequivalents per 100 parts by weight of said synthetic elastomer;

said ionogenic compound having the formula:



where X_1 and X_2 are selected from the group consisting of hydrogen, methyl, carboxyl, fluorine, chlorine, bromine and iodine;

where R_1 is H, C_1 through C_{10} alkyl, $-(CH_2)_n-COOH$ where n is 0 to 4, or a halogen selected from the group consisting of fluorine, chlorine, bromine, and iodine; and

where A is OH, NH_2 or OM where M is a metal selected from Group 1A of the Periodic Table, or a monovalent metal capable of reacting with a metal base or salt;

said synthetic elastomer-forming monomers selected from the group consisting of at least one conjugated diene having from 4 to 10 carbon atoms, at least one conjugated diene having from 4 to 10 carbon atoms with at least one olefin having from 2 to 12 carbon atoms so that a multi-component polymer is formed, and combinations thereof;

polymerizing said ionogenic compound and said elastomer-forming monomers and

forming a polymerized synthetic elastomer containing from about 8 to 58 milliequivalents of

groups pendant from the backbone of said synthetic elastomer, said pendant groups retaining their ionogenic functionality in said synthetic elastomer, the amount of said polymerized synthetic elastomer ranging from about 1 percent to about 99 percent by weight based upon the total weight of said polymer blend,

adding a compound selected from the group consisting of natural or synthetic cis-1,4-polyisoprene to said polymerized synthetic elastomer and forming an elastomer blend;

adding and mixing a metal base or salt, said metal base or salt having the formula MZ, wherein M is a metal selected from Group 2A or 2B of the Periodic Table or a polyvalent metal which is capable of reacting with said ionogenic group, and Z is an oxide or hydroxide anion such that said metal base or said metal salt will react with two or more of said ionogenic groups;

reacting said metal base or salt with said 8 to about 58 milliequivalents of said pendant

groups per 100 parts by weight of said synthetic polymer; and

forming ionic bonds between said metal and said pendant ionogenic

groups and thereby improving the green strength of said blend of said polymerized synthetic elastomers and said natural or synthetic polyisoprene;

carrying out said reaction and the formation of said ionogenic bond between said metal base or salt and said pendant

groups at a temperature below a vulcanizing temperature so that vulcanization is prevented;

the amount of said metal base or salt ranging from about 0.1 to about 10 parts by weight per 100 parts by weight of said blend; after forming said elastomer blend having improved prevulcanized or green strength,

making and shaping said elastomer blend into a tire or a tire component having improved green strength, and

retaining the shape via said improved green strength of said tire or said tire component until vulcanization.

4,254,014

POLYCARBONATE CONTAINING A BIS(CYCLIC PHOSPHITE) AS A THERMAL STABILIZER

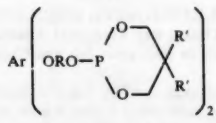
Gerald K. McEwen, and Lowell S. Thomas, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 27, 1979, Ser. No. 69,960

Int. Cl.[3] C07F *9/15;* **C08K** *5/52*

U.S. Cl. 260—45.7 PH **5 Claims**

1. An aromatic bis(dioxaphosphorinane) represented by the formula:



wherein Ar is a divalent aromatic radical having each of its valences on an aromatic ring; each R is individually a divalent aliphatic radical and each R′ is individually hydrogen or a monovalent organic radical provided that the aromatic bis(dioxaphosphorinane) is inert to polycarbonates.

3. A polycarbonate composition comprising a carbonate polymer having dispersed therein the aromatic bis(dioxaphosphorinane) of claim 1 in an amount sufficient to measurably increase the thermal stability or processability of the carbonate polymer.

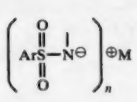
4,254,015

POLYCARBONATE CONTAINING AN AROMATIC SULFONAMIDE AS AN IGNITION DEPRESSANT

Lowell S. Thomas, and Ronald V. Petrella, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 22, 1979, Ser. No. 5,275
Int. Cl.³ C08K 5/16
U.S. Cl. 260—45.9 R **6 Claims**

1. A composition comprising a carbonate polymer having dispersed therein a metal salt of an aromatic sulfonamide having at least one sulfonamide moiety represented by the formula:



wherein Ar is an aromatic group, M is a metal cation and n is a number corresponding to the valence of M.

4,254,016

COMPOSITION CONTAINING VINYLPYRIDINE-STYRENE-BUTADIENE COPOLYMER, AND USE THEREOF AS ADHESIVE

Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 32,883, Apr. 24, 1979, abandoned. This application Dec. 19, 1979, Ser. No. 105,747
Int. Cl.³ C08K 5/17
U.S. Cl. 260—45.85 A **6 Claims**

1. A composition comprising a vinylpyridine-styrene-butadiene copolymer and from 0.01 to 30 parts by weight per 100 parts by weight of the copolymer, of at least one amino acid selected from the group consisting of proline, leucine, isoleucine, homoserine, valine, α-aminobutyric acid, γ-aminobutyric acid, citrulline, lysine, ornithine, arginine, glutamic acid, aspartic acid, and salts of these amino acids with alkali metals, inorganic mineral acids and lower aliphatic carboxylic acids.

4,254,017

ORGANOTIN MERCAPTOALKANOL ESTERS AND ALKOXIDES CONTAINING SULFIDE GROUPS

Robert D. Dworkin, Old Bridge, and William A. Larkin, Morristown, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Nov. 13, 1978, Ser. No. 959,518
Int. Cl.³ C08K 5/57; C07F 7/22
U.S. Cl. 260—45.75 S **20 Claims**

1. An organotin compound containing

(a) at least one tin atom having one or two hydrocarbyl, carboalkoxyhydrocarbyl or ketohydrocarbyl groups bonded to tin through carbon, wherein any alkyl portion of said groups contains from 1 to 20 carbon atoms;

(b) at least one mercaptoalkanol residue bonded to tin through the sulfur atom of said residue, the oxygen atom of said residue being bonded to hydrogen, to a hydrocarbyl group, to the residue obtained by removal of the hydroxyl portion of the one carboxy (—COOH) group of a polycarboxylic or hydroxypolycarboxylic acid, or to an element selected from the group consisting of aluminum, boron, phosphorus, silicon and titanium, with the proviso that any polycarboxylic acid is bonded to at least two mercaptoalkanol residues through an oxygen atom of said residue and a carboxyl group of said polycarboxylic acid;

(c) at least one oxygen or sulfur atom, said atom being bonded exclusively to tin or to tin and hydrogen, or at least one polysulfide group that is bonded exclusively to tin;

(d) up to 52% by weight of tin and

(e) up to 63% by weight of sulfur.

11. A heat stabilized vinyl chloride polymer composition comprising a vinyl chloride polymer and an amount of an organotin compound sufficient to impart resistance to heat-induced degradation to said vinyl chloride polymer wherein the organotin compound contains

(a) at least one tin atom having one or two hydrocarbyl, carboalkoxyhydrocarbyl or ketohydrocarbyl groups, bonded to tin through carbon, wherein any alkyl portion of said groups contains from 1 to 20 carbon atoms;

(b) at least one mercaptoalkanol residue bonded to tin through the sulfur atom of said residue, the oxygen atom of said residue being bonded to hydrogen, to a hydrocarbyl group, to the residue obtained by removal of the hydroxyl portion of one carboxy (-COOH) group of a polycarboxylic or hydroxypolycarboxylic acid, or to an element selected from the group consisting of aluminum, boron, phosphorus, silicon and titanium;

(c) at least one oxygen or sulfur atom, said atom being bonded exclusively to tin or to tin and hydrogen, or at least one polysulfide group that is bonded exclusively to tin;

(d) up to 52% by weight of tin and

(e) up to 63% by weight of sulfur.

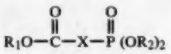
4,254,018

LINEAR POLYESTERS CONTAINING PHOSPHONATE HEAT STABILIZERS

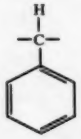
Jochen Kowallik, and Alexander Brandner, both of Heinsberg, Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 1, 1978, Ser. No. 882,097
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1977, 2708790
Int. Cl.³ C08K 5/53
U.S. Cl. 260—45.85 R **12 Claims**

1. A linear homopolyester or copolyester of one or more dicarboxylic acids and one or more dihydroxy compounds, which contains a phosphonate corresponding to the following general formula:



in which R_1 and R_2, which may be the same or different, represent an alkyl group and X represents CH_2 or



in a quantity corresponding to from 10 to 400 ppm of phosphorus, based on the polyester, in a free and/or chemically bound form.

4,254,019

MINERAL-RESIN MATRIX

Karl K. K. Kroyer, Engtoften 3,, DK-8260 Viby J., Denmark

Filed May 20, 1977, Ser. No. 798,980
Claims priority, application United Kingdom, May 24, 1976, 21367/76; Jul. 21, 1976, 30413/76
Int. Cl.³ C08L 61/06
U.S. Cl. 260—38 **8 Claims**

1. A material for use in the molding or pressing of articles which comprises in admixture a crystallizable glass which is made in a rotary kiln and comprises numerous bubbles and is

ground in such a manner that numerous cavities are formed on the surfaces of the particles by cleavage of the bubbles and comprises fractions of relatively fine-grained material having a particle size of up to 250 μm and fractions of coarser particles having a particle size of from 250 to 5000 μm, wherein the particles of the relatively fine-grained material have been subjected to an intimate mixing treatment in the presence of an organic binder thereby to essentially distribute the binder in the form of a coating on the rough surface of the particles of the relatively fine-grained material, and wherein said coated particles are distributed among the coarser particles.

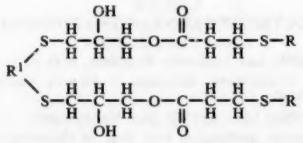
4,254,020

SYNERGISTIC ANTIOXIDANT MIXTURES

Richard H. Kline, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 16, 1979, Ser. No. 95,021
Int. Cl.³ C08K *5/37;* **C07C** *149/20*
U.S. Cl. 260—45.85 H **15 Claims**

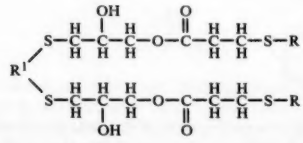
1. A composition comprising (A) organic material selected from the group of oxidizable polymers, oils, resins, waxes and fuels; containing an effective amount of a mixture of (B) a phenolic antioxidant and (C) a compound of the formula:



(I)

wherein R is selected from the group comprised of (1) alkyl radicals having 6 to 20 carbon atoms; (2) phenyl radicals which may be substituted by 1 or 2 alkyl groups having 1 to 8 carbon atoms; (3) or aralkyl radicals having 7 to 12 carbon atoms, and wherein R^1 is selected from the group comprised of (1) alkylene radicals having 2 to 6 carbon atoms; (2) cycloalkylene radicals having 5 to 12 carbon atoms; (3) alkylcycloalkylene radicals of the formula $—R_3—R_2—(R_4)_n$, wherein R_2 is a cycloalkylene radical having 5 to 12 carbon atoms and R_3 and R_4 are alkylene radicals having 1 to 6 carbon atoms, and n equals 1 or 0; (4) or a group of the formula R_5YR_6, wherein R_5 and R_6 are alkylene radicals having 2 to 6 carbon atoms and Y is oxygen, sulfur or a 1,4-phenylene radical; the ratio of C to B ranging from 1:4 to 4:1.

9. A compound of the formula:



(I)

wherein R is selected from the group comprised of (1) alkyl radicals having 6 to 20 carbon atoms; (2) phenyl radicals which may be substituted by 1 or 2 alkyl groups having 1 to 8 carbon atoms; (3) or aralkyl radicals having 7 to 12 carbon atoms, and wherein R^1 is selected from the group comprised of (1) alkylene radicals having 2 to 6 carbon atoms; (2) cycloalkylene radicals having 5 to 12 carbon atoms; (3) alkylcycloalkylene radicals of the formula $—R_3—R_2—(R_4)_n$, wherein R_2 is a cycloalkylene radical having 5 to 12 carbon atoms and R_3 and R_4 are alkylene radicals having 1 to 6 carbon atoms, and n equals 1 or 0; (4) or a group of the formula R_5YR_6, wherein R_5 and R_6 are alkylene radicals having 2 to 6 carbon atoms and Y is oxygen, sulfur or a 1,4-phenylene radical.

4,254,021

TISSUE SPECIFIC PROTEIN AND PROCESS FOR PREPARING SAME

Hans Bohn, Marburg an der Lahn, and Wilhelm Winckler, Wenkbach, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 830,775, Sep. 6, 1977, abandoned. This application Aug. 21, 1979, Ser. No. 68,459
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1976, 2640387
Int. Cl.³ A61K *35/50, 39/395;* **C07G** *7/00*
U.S. Cl. 260—112 B **3 Claims**

1. An isolated, concentrated tissue protein obtained by fractionating an organ extract or a solution obtained from such an extract, said tissue protein having:

(a) a protein proportion of 94±3%;

(b) an amino acid analysis of

	Mol %	Variation coefficient (%)
lysine	5,64	12.7
histidine	1.05	15.0
arginine	3.83	9.2
aspartic acid	9.84	6.8
threonine	4.33	15.7
serine	4.78	8.2
glutamic acid	11.29	3.5
proline	6.41	9.2
glycine	8.65	9.8
alanine	7.51	6.4
cystine/2	2.11	12.6
valine	6.68	7.9
methionine	0.98	14.5
isoleucine	3.32	7.4
leucine	14.43	4.2
tyrosine	5.10	14.9
phenylalanine	3.08	13.5
and tryptophan	1.14	11.4

(c) a carbohydrate proportion of 5.4±2.2% consisting of 3.0±1% of hexoses, 1.2±0.5% of hexosamine, 0.2±0.2% of fucose, and 1.0±0.5% of neuraminic acid.

(d) a sedimentation coefficient $S_{20,w}{}^{c=0.1}$ of 3.5 S±0.5 S;

(e) a molecular weight determined by the sedimentation equilibrium method of 37,100±1,400;

(f) an isoelectric point of 4.9±0.3, measured with polyamide gel plates, and of 4.5±0.3, measured in an electrofocussing column, an electrophoretic mobility in the range between the α_2- and β_1-globulins; and

(g) an extinction coefficient $E_{1\ cm}{}^{1\%}$ (278 nm) of 11.9±1.0.

4,254,022

PROTEIN CONCENTRATE FROM HIGH-PROTEIN PEARL MILLET

August V. Bailey, and Gene Sumrell, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 21, 1980, Ser. No. 132,582
Int. Cl.³ A23J *1/12*
U.S. Cl. 260—112 R **4 Claims**

1. A process for obtaining a high-protein concentrate of the protein present in pearl millet grain by extraction of the defatted flour in sequence with aqueous lower (C_1-C_4) alcohol (50–90%); aqueous alkali (pH 8–12); dilute aqueous mineral acid (pH 1–3); and, recovery of the protein concentrate from the extracts.

4,254,023
SYNTHESIS OF PEPTIDE ALCOHOLS BY THE SOLID PHASE METHOD

John M Stewart, Denver, and Dan H. Morris, Broomfield, both of Colo., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 16, 1979, Ser. No. 85,231

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **7 Claims**

1. A method of synthesizing a peptide alcohol represented by one member of the group consisting of low molecular weight peptides produced from a peptide of similar number of amino acids which comprises reducing the terminal carboxyl group in the presence of a moderate excess of alkali metal borohydride under solid phase conditions at room temperature for about 1–3 hours and recovering a cleaved product containing the peptide product.

4,254,024
TETRAPEPTIDES AND DERIVATIVES HAVING OPIATE ACTIVITY

John M. Stewart, Denver; Dan H. Morris, Broomfield, both of Colo., and Richard E. Chipkin, Bloomfield, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 16, 1979, Ser. No. 85,253

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **11 Claims**

1. Tetrapeptides having the formula

H-Tyr-X-Y-Z

wherein

X is a D-amino acid radical selected from the group consisting of D-Ala and D-Lys;

Y is Phe, DPhe, MePhe, DMePhe, Trp or DTrp;

Z is Met-OH, Met-ol, Met(O)-ol, Met-OR, Met-NH_2, Met-NHR, DMet-OH, DMet-ol, DMet(O)-ol, DMet-OR, DMet-NH_2, DMet-NHR, Leu-OH, Leu-ol, Leu-OR, Leu-NH_2, Leu-NHR, DLeu-OH, DLeu-ol, DLeu-OR, DLeu-NH_2, or DLeu-NHR; and

R is C_1–C_4-alkyl or C_1–C_4-hydroxyalkyl.

4,254,025
DISAZO AND POLYAZO DYESTUFFS

Erich Krämer, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

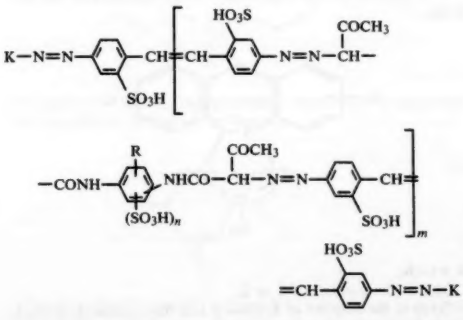
Filed Oct. 10, 1978, Ser. No. 950,178

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745777

Int. Cl.³ C07C *107/00*; C09B *27/00, 31/30*

U.S. Cl. 260—144 **13 Claims**

1. Azo dyestuffs which, in the form of the free acid, correspond to the general formula



wherein

R denotes hydrogen, methyl, ethyl, methoxy, ethoxy or chlorine,

n denotes 0 or 1,

K denotes the radical of a coupling component in the case where m is an integer from 1 to 10,

the second carbamoyl group in the R-substituted benzene nucleus being in the m-position or p-position relative to the first carbamoyl group.

4,254,026
WATER-SOLUBLE MONOAZO DYESTUFFS

Wolfgang Bauer, Maintal, and Joachim Ribka, Offenbach am Main-Bürgel, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

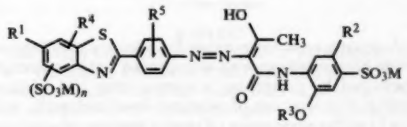
Filed Mar. 19, 1979, Ser. No. 21,465

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821350

Int. Cl.³ C09B *29/22*

U.S. Cl. 260—158 **3 Claims**

1. A water-soluble monoazo dyestuff of the formula



or a tautomeric form thereof, wherein R^1 is methyl, ethyl or 6-methyl-7-sulphobenzthiazol-2-yl, R^2 is methyl, methoxy or ethoxy, R^3 is methyl or ethyl, R^4 and R^5 may be the same or different and are hydrogen, methyl or ethyl, M is hydrogen, alkali metal or ammonium and n is 0 or 1.

4,254,027
DISPERSE MONOAZO DYESTUFFS FOR COLORING SYNTHETIC TEXTILE MATERIALS

Violet Boyd; Brian R. Fishwick, both of Manchester, England, and Brian Glover, Charlotte, N.C., assignors to Imperial Chemical Industries Limited, London, England

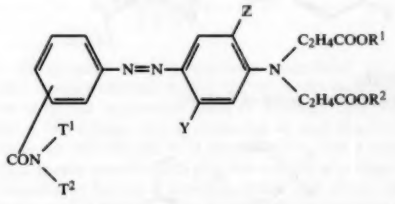
Filed Jun. 21, 1976, Ser. No. 698,584

Claims priority, application United Kingdom, Jul. 28, 1975, 31543/75

Int. Cl.³ C07C *107/06*; C09B *29/085, 29/26*

U.S. Cl. 260—207 **2 Claims**

1. A disperse monoazo dyestuff which is of the formula:

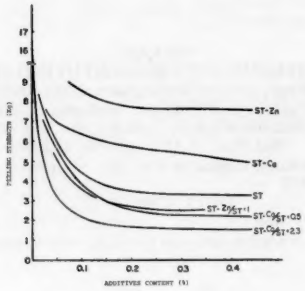


wherein T^1 and T^2 are independently selected from hydrogen and lower alkyl; Z is selected from hydrogen, lower alkyl and lower alkoxy; Y is selected from hydrogen, chlorine, bromine, lower alkyl, lower alkoxy, —$NHCOX^1$ and —$NHSO_2X^2$, wherein X^1 is selected from lower alkyl, lower alkoxy, amino and N-lower alkylamino, and X^2 is lower alkyl; and R^1 and R^2 are each selected from lower alkyl and hydroxyalkyl containing from 2 to 4 carbon atoms.

4,254,028
STYRENE RESIN COMPOSITION

Shohachi Ono, Kurashiki; Noriaki Umeda, Yokosuka; Hisayoshi Kai, Chiba, and Kenichi Okada, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,022
Int. Cl.[3] C08K 5/09; C08L 25/04
U.S. Cl. 260—23 S 2 Claims



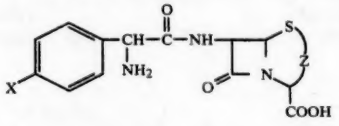
1. A styrene resin composition for injection moldings and injection blow moldings with an improved weldline strength, characterized by comprising a styrene resin and additives consisting of at least one of saturated linear carboxylic acids having 12 to 22 carbon atoms (A) and at least one of metal salts of higher fatty acids (B), said additives totaling to 0.07 to 0.4 part by weight based on 100 parts by weight of said styrene resin and the weight ratio of said component (B) to said component (A) ranging from $\frac{1}{3}$ to 3.5.

4,254,029
PROCESS FOR PREPARING β-LACTAM ANTIBIOTICS

Joseph Kaspi, Givataim; Moshe Gross, and Menasse Nussim, both of Netanya, all of Israel, assignors to Plantex Ltd., Netanya, Israel

Filed Nov. 19, 1979, Ser. No. 95,164
Claims priority, application Japan, Nov. 20, 1978, 53-144027; Israel, Jun. 25, 1979, 54-57635
Int. Cl.[3] C07D 501/06, 499/12
U.S. Cl. 260—239.1 20 Claims

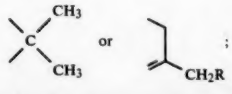
1. A process for preparing compounds of formula (I):



(I)

[in which:

Z represents a group of formula



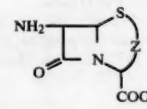
;

R represents a hydrogen atom, a 1-pyridyl group or a group of formula —YR′ (in which: R′ represents an alkyl group, an alkanoyl group, a carbamoyl group or a heterocyclic group; and Y represents an oxygen or a sulphur atom);

X represents a hydrogen atom or a hydroxy group; and

the α-amino acid moiety is in the D(−)configuration] which comprises:

(a) silylating a compound of formula (II):



(II)

(in which Z is as defined above);

(b) acylating the product of step (a) with D(−)-phenylglycyl chloride hydrochloride or with D(−)-p-hydroxyphenylglycyl chloride hydrochloride in the presence of an N-alkylpyrrolidone, the molar ratio of said N-alkylpyrrolidone to said compound of formula (II) being from 1:1 to 4:1; and

(c) hydrolyzing the product of step (b) to give said compound of formula (I).

4,254,030
FLUOROSULPHONYL OXAFLUOROALKANES FLUOROSULPHONYL OLEFINES AND PROCESSES FOR THEIR PREPARATION

Gerardo Caporiccio; Gianangelo Bargigia, and Giampiero Guidetti, all of Milan, Italy, assignors to Montedison S.p.A., Switzerland

Division of Ser. No. 821,394, Aug. 3, 1977, Pat. No. 4,180,639. This application Mar. 9, 1979, Ser. No. 19,006
Claims priority, application Italy, Aug. 6, 1976, 26116 A/76; Mar. 2, 1977, 20831 A/77
Int. Cl.[3] C07C 143/70; C08F 28/02
U.S. Cl. 260—543 F 11 Claims

1. A substituted fluoride of an oxafluoroalkansulphonic acid having the formula:

$$FSO_2—CFXCF_2—O—CF_2CFX—(CF_2CFX)n—A$$

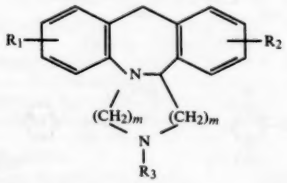
wherein A is I or F, X is independently selected from the group consisting of F, CF_3 and Cl and n is 0-4.

4,254,031
SYNTHESIS FOR THE PREPARATION OF TETRACYCLIC COMPOUNDS

Jacques Olivie, Gisors, France, assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 754,216, Dec. 27, 1976, Pat. No. 4,217,452, which is a continuation-in-part of Ser. No. 547,680, Feb. 6, 1975, Pat. No. 4,025,513. This application Aug. 8, 1979, Ser. No. 64,812
Claims priority, application Netherlands, Feb. 9, 1974, 7401807
The portion of the term of this patent subsequent to May 24, 1994, has been disclaimed.
Int. Cl.[3] C07D 487/04
U.S. Cl. 260—243.3 3 Claims

1. A process for the preparation of a compound of the formula:



in which:

(a) n is the number of 1 or 2,

(b) m is the number of 1, if n=2 and the number 2, if n=1,

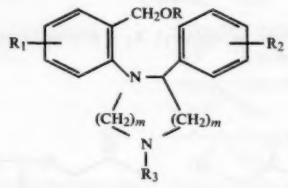
(c) R_1 and R_2 are selected from the group consisting of

hydrogen, hydroxy, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, and trifluoromethyl, and

(d) R_3 is selected from the group consisting of hydrogen and alkyl having 1 to 6 carbon atoms,

which comprises the step of:

ring closing a compound of the formula:



or a salt thereof, in which n, m, R_1, R_2, and R_3 have the aforesaid meanings and R is a phenylalkyl group of 7 to 10 carbon atoms, the phenyl group of which being substituted with one moiety selected from the group consisting of halogen, hydroxy, alkoxy of 1 to 6 atoms, and nitro,

in the presence of an acid selected from the group consisting of sulphuric acid, concentrated hydrochloric acid, picric acid, trifluoroacetic acid, phosphoric acid, polyphosphoric acid, phosphoroxychloride, phosphortrioxide, phosphorpentoxide, and the Lewis acids; and

recovering the desired compound from the reaction mixture in the form of its free base or acid addition salt.

4,254,032

CARBAZOLYLMETHANE COMPOUNDS

Jean C. Petitpierre, Kaiseraugst, and Peter Burri, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,593

Claims priority, application Switzerland, Apr. 24, 1978, 4389781/78

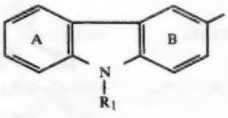
Int. Cl.³ C07D *209/80*

U.S. Cl. 260—315 **5 Claims**

1. A carbazolylmethane compound of the formula

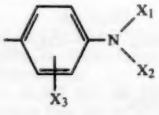
(I)

wherein Q represents a 3-carbazolyl radical of the formula



(Ia)

and each of Y_1 and Y_2, independently, represents an aminosubstituted phenyl radical of the formula



(Ib)

wherein each of X_1 and X_2 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cyclopentyl, cyclohexyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy,

X_3 represent hydrogen, halogen, nitro, lower alkyl, or lower alkoxy,

R_1 represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents alkenyl containing not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, and

the ring A is substituted by one or two fused benzene nuclei, and

the fused benzene nuclei and the ring B, each independently of the other, are unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

4,254,033

METHOD OF RECORDING X-RAY IMAGES AND IMAGING CHAMBER SUITED THEREFOR

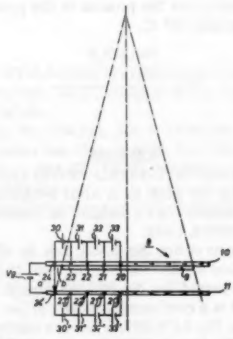
Arnold A. Willem, Moerbeke-Waas; Johan M. Broekaert, Mortsel, and Jean M. De Gueldre, Edegem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Nov. 30, 1978, Ser. No. 964,929

Claims priority, application United Kingdom, Dec. 7, 1977, 50954/77

Int. Cl.³ G03G *13/00, 15/00*

U.S. Cl. 250—315.2 **7 Claims**



1. Ionographic imaging apparatus comprising an ionographic imaging chamber having flat electrodes each having a series of spaced incremental zones of relatively high conductivity, a DC-voltage source connected to said electrodes to maintain an electrostatic field therebetween, and a common voltage supply circuit which provides a series of voltage steps of magnitudes having a common factor and which applies voltages having that common factor to the incremental zones of the electrodes, the distribution of such incremental zones being such that the potential variations along the electrode surfaces approximate to those of spherical cap electrodes providing a concentric spheric equipotential in the imaging gap between the electrodes, the DC-voltage from said DC-voltage source creating the electric field over the inter-electrode gap being a multiple of said common factor and derived from the same voltage supply circuit as the voltages applied to the incremental electrode zones.

4,254,034

MACROCYCLIC POLYETHER COMPLEXES AND METHOD FOR POLYETHER ISOLATION USING SAID COMPLEXES

Arie van Zon, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 23, 1979, Ser. No. 88,201

Claims priority, application United Kingdom, Nov. 10, 1978, 43945/78

Int. Cl.³ C07D *323/00*

U.S. Cl. 260—338 **13 Claims**

1. The complex between 1,4,7,10,13,16-hexaoxacyclooctadecane (18-crown-6) and dimethylcarbonate or dimethyloxalate containing one molecule of dimethylcarbonate or dimethyloxalate per molecule of 18-crown-6.

4,254,035

PROCESS FOR THE PRODUCTION OF 2-ACETAMIDOCINNAMIC ACID

Axel Kleemann; Horst Weigel, both of Hanau, and Paul Scherberich, Constance, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 968,923

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756129

Int. Cl.³ C07D *317/44*; C07C *101/42*

U.S. Cl. 260—340.5 R **26 Claims**

1. In a process for the production of 2-acetamidocinnamic or a ring substituted 2-acetamidocinnamic acid by reacting glycine with an aromatic aldehyde in the presence of acetic anhydride and subsequently treating with water the improvement comprising carrying out the process in the presence of a tertiary amine at at least 50° C.

4,254,036

1-HYDROXYMETHYL-1-OXO-PROSTANE-DERIVATIVES OF THE E, A AND F-SERIES

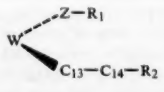
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 3,953, Jan. 16, 1979, which is a continuation-in-part of Ser. No. 961,032, Nov. 18, 1978, which is a continuation-in-part of Ser. No. 858,589, Dec. 8, 1977, Pat. No. 4,202,822, which is a continuation-in-part of Ser. No. 858,588, Dec. 8, 1977, Pat. No. 4,170,597, which is a continuation-in-part of Ser. No. 858,580, Dec. 8, 1977, Pat. No. 4,197,245, which is a continuation-in-part of Ser. No. 858,487, Dec. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 858,504, Dec. 8, 1977, Pat. No. 4,172,839, which is a continuation-in-part of Ser. No. 858,579, Dec. 8, 1977, Pat. No. 4,212,909. This application Jun. 7, 1979, Ser. No. 46,722

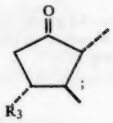
Int. Cl.³ C07C *177/00*

U.S. Cl. 260—340.9 P **37 Claims**

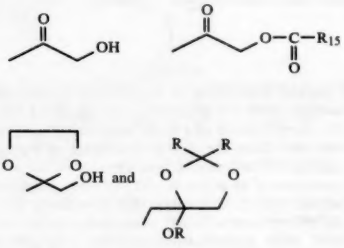
1. An optically active compound of the formula:



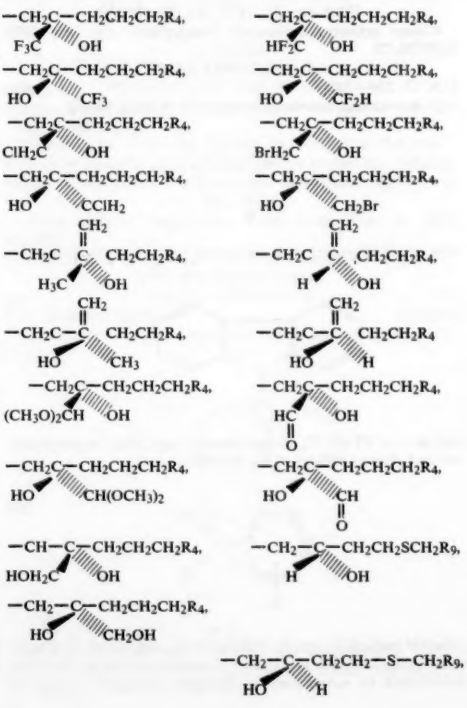
or the racemic mixture of that compound and its mirror image wherein Z is $-(CH_2)_g-$ wherein g is an integer from 5 to 7 inclusive; $C_{13}-C_{14}$ is trans-vinylene; W is



R_3 is hydrogen or hydroxyl; R_1 is selected from the group consisting of



wherein R is C_1-C_4 alkyl, and R_{15} is selected from the group consisting of C_1-C_4 alkyl, di-(C_1-C_4)- alkylamino, C_1-C_4 alkoxy and phenyl or phenyl substituted with one or more substituents selected from the group consisting of C_1-C_4 alkyl, —OR, —SR, F or Cl wherein R is as previously defined; R_2 is



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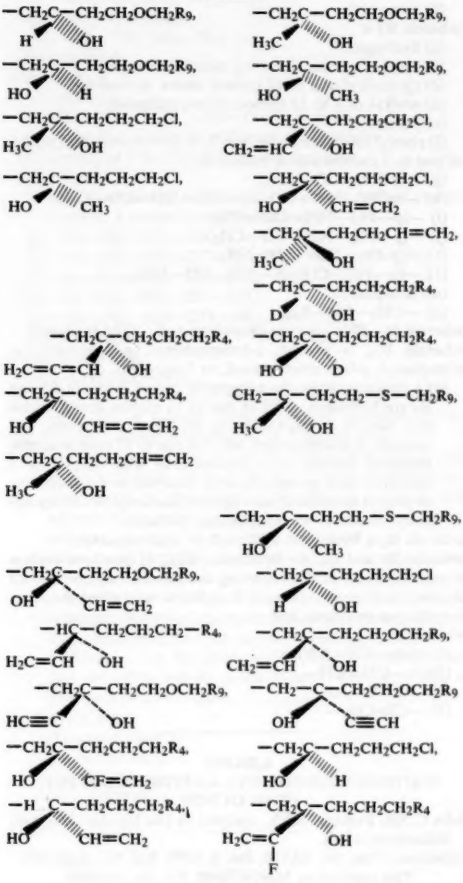


wherein R_4 is hydrogen, chloro, methyl, ethyl or propyl; R_9 is hydrogen or C_1 to C_3 alkyl.

4,254,037

2,2-DIALKYLTETRAHYDROPYRANS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 15,367, Feb. 26, 1979, Pat. No. 4,212,812. This application Oct. 26, 1979, Ser. No. 88,286

Int. Cl.³ C07D *309/04*

U.S. Cl. 260—345.1 **1 Claim**

1. 2-methyl-2-tert-butyl-tetrahydropyran.

4,254,038

2,2-DIALKYLTETRAHYDROPYRANS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 15,367, Feb. 26, 1979, Pat. No. 4,212,812. This application Oct. 26, 1979, Ser. No. 88,289

Int. Cl.³ C07D *309/04*

U.S. Cl. 260—345.1 **1 Claim**

1. 2-methyl-2-(3',3'-dimethylcyclohexyl)-tetrahydropyran.

4,254,039

PROCESS FOR THE PREPARATION OF TETRAHYDROFURAN

Jawad H. Murib, and John M. Inskeep, both of Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,980

Int. Cl.³ C07D *307/08*

U.S. Cl. 260—346.11 **30 Claims**

1. A process for preparing tetrahydrofuran which comprises reacting a cis-1,4-dihalobutene-2 with water in the presence of a catalytically effective amount of strong acid to provide 2,5-dihydrofuran and thereafter hydrogenating said 2,5-dihydrofuran to provide tetrahydrofuran.

17. A process for preparing 2,5-dihydrofuran which comprises reacting a cis-1,4-dihalobutene-2 with water in the presence of a catalytically effective amount of a strong acid.

4,254,040

19-HYDROXY-4,5-DIDEHYDRO-PGI$_1$ COMPOUNDS

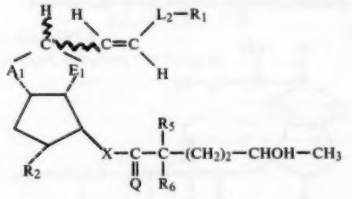
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 054,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,476

Int. Cl.³ C07D *307/935*

U.S. Cl. 260—346.22 **5 Claim**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_1 is —CH_2—;

wherein L_2 is

(1) —$(CH_2)_j$—, wherein j is one to 4, inclusive,

(2) —$(CH_2)_q$—CF_2—, wherein q is one, 2, or 3; or

(3) —CH=CH—;

wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_1 is

(1) —$COOR_3$,

(2) —CH_2OH,

(3) —$CH_2N(R_7)(R_8)$,

(4) —CO—N(R_7)(R_8),
(5) —CO—NH—SO_2—R_{15}, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)-NH-CO-CH_3,
(i) —(p-Ph)—NH—CO—(Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{16},
wherein —(p-Ph)— is para-phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or (4) —CH_2CH_2—.

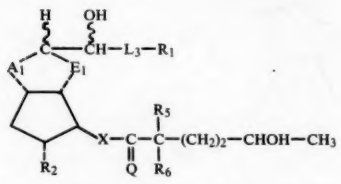
4,254,041

19-HYDROXY-5-HYDROXY-PGI COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508.
This application Mar. 3, 1980, Ser. No. 126,477
Int. Cl.³ C07D *307/935*
U.S. Cl. 260—346.22 **5 Claims**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_1 is —CH_2—;
wherein L_3 is
(1) —$(CH_2)_n$—, wherein n is one to 5, inclusive,
(2) —$(CH_2)_p$—CF_2—, wherein p is 2, 3, or 4; or
(3) —CH_2—CH=CH—;
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,
(3) —$CH_2N(R_7)(R_8)$,
(4) —CO—N(R_7)(R_8),
(5) —CO—NH—SO_2—R_{15}, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{16},
wherein (p—Ph)— is para-phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

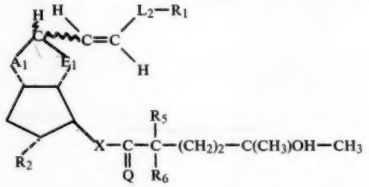
4,254,042

19-HYDROXY-19-METHYL-4,5-DIDEHYDRO-PGI$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507.
This application Mar. 3, 1980, Ser. No. 126,508
Int. Cl.³ C07D *307/935*
U.S. Cl. 260—346.22 **5 Claims**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_1 is —CH_2—;
wherein L_2 is
(1) —$(CH_2)_j$—, wherein j is one to 4, inclusive,
(2) —$(CH_2)_q$—CF_2—, wherein q is one, 2, or 3; or
(3) —CH=CH—;
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) —$COOR_3$,
(2) —CH_2OH,

(3) —$CH_2N(R_7)(R_8)$,
(4) —$CO—N(R_7)(R_8)$,
(5) —$CO—NH—SO_2—R_{15}$, or
(6) tetrazolyl,

wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p—Ph)—$CO—CH_3$,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—$CO—CH_3$,
(i) —(p—Ph)—NH—CO—(Ph),
(j) —(p—Ph)—NH—$CO—CH_3$,
(k) —(p—Ph)—NH—$CO—NH_2$,
(l) —(p—Ph)—CH=N—NH—$CO—NH_2$,
(m) β-naphthyl,
(n) —$CH_2—CO—R_{16}$,

wherein —(p—Ph)— is para-phenylene and —(Ph) is phenyl; wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-nbenzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and

wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3)—C≡C—, or
(4) —CH_2CH_2—.

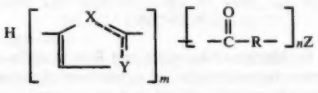
4,254,043

METHOD FOR THE ACYLATION OF HETEROCYCLIC COMPOUNDS

George S. Kuta, Ft. Pierce, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,365
Int. Cl.³ C07D *307/46*
U.S. Cl. 260—347.4 **9 Claims**

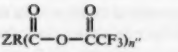
1. A process for preparing the compound of the formula:



I

wherein X is the radical selected from the group —N=, —NH—, —O— and —S—; R is C_1 to C_{12} alkylene; Z is selected from the group hydrogen, cyano, halo, C_1 to C_6 alkoxy, C_1 to C_6 alkoxycarbonyl, and unsubstituted or substituted phenyl, the substituents selected from the group C_1 to C_6 alkyl, C_1 to C_6 alkoxy, cyano, halo and trifluoromethyl; Y is the radical selected from the group —CH— and —CH=CH—; m and n are identical or different and are whole integers having a value of at least 1; and, where X is the radical —N= or —NH—, the pharmaceutically acceptable non-toxic salts thereof which comprises treating a compound of the formula

where X and Y are as previously defined with a compound of the formula



wherein R and Z are as previously defined and n' is the integer 1 or 2 and separating the compound of formula I.

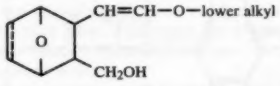
4,254,044

7-OXABICYCLOHEPTANE- AND 7-OXABICYCLOHEPTENE COMPOUNDS

Peter W. Sprague, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 949,838, Oct. 10, 1978, Pat. No. 4,220,594, which is a division of Ser. No. 848,543, Nov. 4, 1977, Pat. No. 4,143,054. This application Mar. 7, 1980, Ser. No. 128,216
Int. Cl.³ C07D *307/00*
U.S. Cl. 260—347.8 **5 Claims**

1. A compound having the formula



wherein the dotted line is an optional double bond.

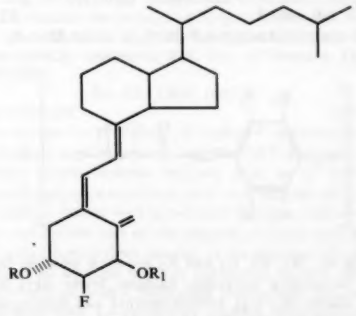
4,254,045

1α-HYDROXY-2β-FLUOROCHOLECALCIFEROL

Hector F. DeLuca, Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis.; Masuo Morisaki, Tokyo, Japan, and Jun-ichi Oshida, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 21, 1980, Ser. No. 142,552
Int. Cl.³ C07J *9/00*
U.S. Cl. 260—397.2 **9 Claims**

1. Compounds having the formula



where each of R and R_1 is hydrogen or acetyl.

4,254,046

METHOD FOR MAKING DIMETHYLTIN DIFLUORIDE

Helmut Franz, Pittsburgh; Paul F. Duffer, Creighton, and James H. Hanlon, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 5, 1979, Ser. No. 9,016
Int. Cl.[3] C07F 7/22
U.S. Cl. 260—429.7 6 Claims

1. A method for making dimethyltin difluoride comprising the steps of:

a. selecting a source of fluoride from the group consisting of alkali metal fluoride, ammonium fluoride and ammonium bifluoride;

b. preparing an aqueous solution of the selected fluoride; and

c. reacting dimethyltin dichloride with said fluoride in essentially aqueous solution to precipitate dimethyltin difluoride.

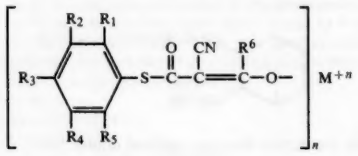
4,254,047

SUBSTITUTED PHENYL-2-CYANO-2-THIOALKENOIC ACID ESTERS

John W. Hanifin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,527
Int. Cl.[3] A61K 31/275; C07C 153/11
U.S. Cl. 260—455 R 17 Claims

1. A compound selected from those of the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are each selected from the group comprising hydrogen, halogen, lower alkyl (C_1–C_4), lower alkoxy (C_1–C_4), trifluoromethyl and trichloromethyl; R_6 is lower alkyl (C_1–C_4); M is hydrogen or a pharmaceutically acceptable cation; and n is an integer one, two or three.

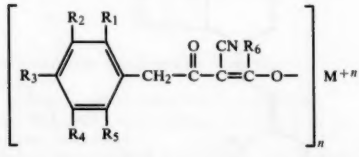
4,254,048

SUBSTITUTED PHENYL ALKYLIDENE ACETOACETONITRILES

John W. Hanifin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,509
Int. Cl.[3] A61K 31/275; C07C 121/76
U.S. Cl. 260—465 F 12 Claims

1. A compound selected from those of the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are each selected from the group comprising hydrogen, halogen, lower alkyl (C_1–C_4), lower alkoxy (C_1–C_4), trifluoromethyl and trichloromethyl; R_6 is lower alkyl (C_1–C_4); M is hydrogen or a pharmaceutically acceptable cation; and n is an integer 1, 2, or 3.

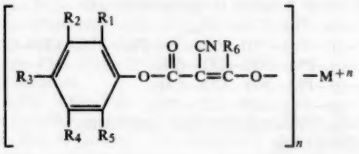
4,254,049

SUBSTITUTED PHENYL-2-CYANO-2-ALKENOIC ACID ESTERS

John W. Hanifin, Jr., Suffern, and David N. Ridge, Upper Grandview, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 17, 1979, Ser. No. 104,510
Int. Cl.[3] A61K 31/275; C07C 121/75
U.S. Cl. 260—465 D 19 Claims

1. A compound selected from those of the formula:



wherein R_1, R_2, R_3, R_4 and R_5 are each selected from the group comprising hydrogen, halogen, lower alkyl (C_1–C_4), lower alkoxy (C_1–C_4), trifluoromethyl and trichloromethyl; R_6 is lower alkyl (C_1–C_4); M is hydrogen or a pharmaceutically acceptable cation; and n is an integer 1, 2, or 3.

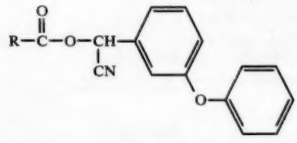
4,254,050

PREPARATION OF ESTERS

Jonathan S. Baum, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

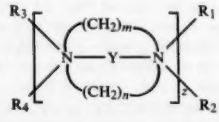
Continuation-in-part of Ser. No. 79,622, Sep. 27, 1979, abandoned. This application Jun. 6, 1980, Ser. No. 156,958
Int. Cl.[3] C07C 120/00, 121/75
U.S. Cl. 260—465 D 9 Claims

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, and 1-(4-chlorophenyl)-2-methylpropyl which comprises reacting an acyl halide of the formula

wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of rate-promoting agent selected from tertiary polyamines which are linear tertiary polyamines of the formula



wherein Y is $-(CH_2)_k-$ with k being 1–6, C_3—C_7 cycloalkane, C_2—C_6 alkenyl, or C_2—C_6 alkynyl; z is 1 or 2, and when z is 1, m and n are 0 or independently 1–6, and when m and n are 0, R_1, R_2, R_3, and R_4 are hydrocarbon groups, and R_1 may be joined with R_2, and R_3 may be joined with R_4 to form a ring containing the N atom to which both are joined, and when m is 1–6 and n is 0, R_1 and R_3 are absent, and R_2 and R_4 are hydrocarbon groups, and when both m and n are at least 1, R_2 and R_4 are absent; and when z is 2, m and n are 0, R_1 and R_3 are hydrocarbon groups and R_2 and R_4 are absent, 1,4,8,11-tetramethyl-1,4,8,11-tetraazacyclotetradecane, sparteine, and cryptates.

4,254,051

PREPARATION OF ESTERS

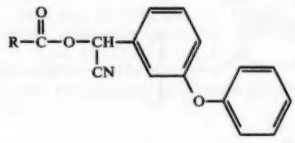
Jonathan S. Baum, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 079,635, Sep. 27, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,085

Int. Cl.³ C07C *120/00, 121/75*

U.S. Cl. 260—465 D **8 Claims**

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoropropenyl)-2,2-dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, and 1-(4-chlorophenyl)-2-methylpropyl which comprises reacting an acyl halide of the formula

wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of amphoteric surfactant rate-promoting agent selected from aminoalkylsulfonic acids.

4,254,052

PREPARATION OF ESTERS

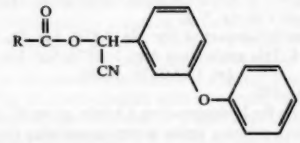
Jonathan S. Baum, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 079,610, Sep. 27, 1979, abandoned. This application Jun. 13, 1980, Ser. No. 159,338

Int. Cl.³ C07C *120/00, 121/75*

U.S. Cl. 260—465 D **7 Claims**

1. A process for preparing an insecticidal α-cyano-3-phenoxybenzyl ester of the formula



wherein R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-b 3,3,3-trifluoropropenyl)-2,2 dimethylcyclopropyl, 2,2,3,3-tetramethylcyclopropyl, and 1-(4-chlorophenyl)-2-methylpropyl which comprises reacting an acyl halide of the formula

wherein X is chlorine or bromine and R is as defined above with 3-phenoxybenzaldehyde in a mixture of substantially water-immiscible aprotic solvent and an aqueous solution of water-soluble cyanide salt in the presence of a catalytic amount of rate-promoting agent selected from acid salts of tertiary amines.

4,254,053

PROCESS FOR MANUFACTURING D CAMPHORATE OF L CARNITINAMIDE AND D CAMPHORATE OF D CARNITINAMIDE

Paolo deWitt, and Enrico Diamanti, both of Rome, Italy, assignors to Claudio Cavazza, Rome, Italy

Filed Jul. 6, 1979, Ser. No. 55,238

Claims priority, application Italy, Jul. 10, 1978, 50222 A/78

Int. Cl.³ C07C *91/26*

U.S. Cl. 260—501.15 **9 Claims**

1. In a process for producing the D-camphorate of L-carnitinamide and the D-camphorate of D-carnitinamide comprising the preparation of the D-camphorate of D,L-carnitinamide from a silver salt of D-camphoric acid and D,L-carnitinamide hydrochloride, forming an alcoholic solution of said camphorate with a lower alkanol having from 1 to 5 carbon atoms and separating the solid phase comprising the D-camphorate of L-carnitinamide from the alcoholic solution,

the improvement whereby

(a) an aqueous solution of D,L-carnitinamide free base is prepared by contacting a solution of D,L-carnitinamide hydrochloride with a strongly acidic or strongly basic ion exchange resin and

(b) substantially directly after said free base solution is prepared contacting said free base solution with D-camphoric acid to form the D-camphorate of D,L-carnitinamide.

4,254,054

PROCESS FOR THE MANUFACTURE OF 4-NITRO-4'-AMINO-DIPHENYLAMINE-2-SULFONIC ACID AND 2-NITRO-4'-AMINO-DIPHENYLAMINE-4-SULFONIC ACID

Otto Arndt, and Wolfgang Tronich, both of Hofheim am Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,852

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844610

Int. Cl.³ C07C *143/56*

U.S. Cl. 260—510 **10 Claims**

1. In a process for production of 4-nitro-4'-amino-diphenylamine-2-sulfonic acid or a sodium salt thereof from a sodium salt of 6-chloro-3-nitro-benzene sulfonic acid or of 2-nitro-4'-amino-diphenylamine-4-sulfonic acid or a sodium salt thereof from a sodium salt of 4-chloro-3-nitro-benzene sulfonic acid, wherein the sodium salt of the benzene sulfonic acid is condensed with 1,4-phenylene diamine in the presence of a proton acceptor in an aqueous medium containing sodium chloride, the improvement which comprises condensing the benzene sulfonic acid with 1,4-phenylene diamine in a substantially saturated aqueous solution of sodium chloride.

4,254,055

SYNTHESIS OF TETRASODIUM PENTAERYTHRITYL TETRAKIS (DITHIOCARBAMATE)

Harry J. Hyer, Los Gatos, and John E. Sundberg, Fairfax, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 6, 1977, Ser. No. 803,840
Int. Cl.[3] C07C *155/00*
U.S. Cl. 260—513.5 4 Claims

1. A method for manufacturing the alkali metal salt of pentaerythrityl tetrakis dithiocarbamate from carbon disulfide, pentaerythrityl tetramine and alkali metal hydroxide which comprises:

(a) placing in a reaction vessel carbon disulfide and a slightly basic, water soluble inert solvent therefor;
(b) cooling said mixture to below about 5° C.;
(c) adding pentaerythrityl tetramine to the cooled carbon disulfide with stirring;
(d) stopping cooling of said reaction mixture after a precipitate has formed;
(e) adding an aqueous solution of alkali metal hydroxide to said reaction mixture slowly until a basic condition is obtained;
(f) permitting the reaction to continue until an acidic condition is obtained;
(g) adding additional alkalai metal hydroxide and repeating steps (e) and (f) until sufficient alkalai metal hydroxide has been added to complete the conversion at which time a mixture containing two liquid layers and no solid will be obtained; and
(h) evaporating said reaction mixture to dryness.

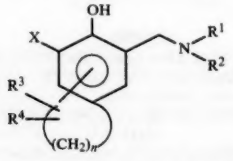
4,254,056

2-AMINOMETHYL PHENOL DERIVATIVE AND PROCESS FOR PREPARING THEREOF

Mitoshi Konno, Kyoto; Hiroyuki Itoh, Suita; Takao Tokuhiro, Nagaokakyo; Katsumi Ohta, and Masaki Hayashi, both of Takatsuki, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 28, 1978, Ser. No. 974,179
Claims priority, application Japan, Dec. 29, 1977, 53-158737
Int. Cl.[3] C07C *87/20, 91/30*; A61K *27/00*
U.S. Cl. 564—387 15 Claims

1. A 2-aminomethyl phenol compound of the formula (I):



(I)

wherein X is a halogen atom; R^1, R^2, R^3 and R^4 which may be the same or different are each a hydrogen atom or a straight or branched chain alkyl group having 1 to 4 carbon atoms; and n is 2, 3, 4 or 5 or a pharmaceutically acceptable acid addition salt thereof.

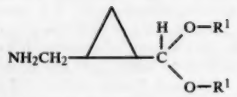
4,254,057

2-AMINOMETHYLCYCLOPROPYL-1,1-DIALKYLACETALS

Janet A. Day, Gillingham; Barry R. J. Devlin, Sittingbourne, and Robert J. G. Searle, Rodmersham, Green, all of England, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 49,374, Jun. 18, 1979. This application Jan. 24, 1980, Ser. No. 114,790
Int. Cl.[3] C07C *87/34*
U.S. Cl. 564—455 2 Claims

1. A compound of the formula:



wherein each R^1 is alkyl and contains from one to four carbon atoms, said compound being in the cis-isomeric configuration.

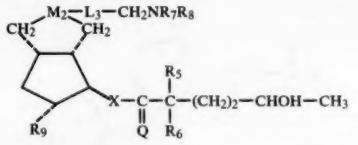
4,254,058

2-DECARBOXY-2-AMINOMETHYL-19-HYDROXY-6A-CARBA-PGI$_2$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 054,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,469
Int. Cl.[3] C07C *87/34, 87/40, 87/451, 87/453*
U.S. Cl. 564/384 1 Claim

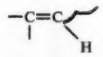
1. A prostacyclin-type compound of the formula



wherein L_3 is

(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive,
(2) $-(CH_2)_p-CF_2-$, wherein p is 2, 3, or 4,
(3) $-CH_2-CH=CH-$;

wherein M_2 is



wherein Q is oxo, α-H:β:H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein R_9 is hydrogen or hydroxyl; and
wherein X is

(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

4,254,059

PROCESS FOR HYDROGENATION OF NITRILES

Roger A. Grey, Denville, and Guido P. Pez, Boonton, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 7,874, Jan. 31, 1979, abandoned. This application Aug. 1, 1979, Ser. No. 62,874
Int. Cl.[3] C07C *85/20*
U.S. Cl. 464—492 23 Claims

1. A process for hydrogenating a nitrile group in a chemical compound to a primary amine group comprising contacting a solution of hydrogenation catalyst and said compound, neat or in an inert solvent therefor, with an atmosphere containing hydrogen gas, at a temperature of about 0° to 150° C. under a

pressure of about 0 to 150 psig, said catalyst being a composition of the formula:

$$[(L_aL_b'L_c''M)_xH_y]_z^{r-}Q_s^{q+}$$

including dimers, trimers and tetramers thereof, wherein L, L' and L'' are independently selected from organoligands containing phosphorus, arsenic or antimony elements, each ligand being free of carbonyl and containing at least one said element, M being a Group VIII metal, H being hydrido, Q being a cation, wherein a, b and c are integer values of 0 or 1, the sum of a, b, c being of from 1 to 3, x being a value of 1 or 2, y being an integer value of from 1 to 3x, x being defined above, r and s being independently integer values of 1 or 2, and z and q independently being integer values of from 1 to 3, wherein said composition is electrically neutral and contains a minimum of one and a maximum of three atoms of phosphorus, arsenic, antimony, or mixtures thereof, per Group VII metal atom.

4,254,060

PROCESS FOR PRODUCING AN ALIPHATIC AMINE

Hiroshi Kimura; Kazuhito Matsutani, and Shunichi Tsutsumi, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

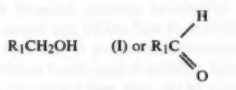
Filed Feb. 19, 1980, Ser. No. 122,405
Claims priority, application Japan, Feb. 21, 1979, 54-19580
Int. Cl.[3] C07C *85/06, 85/08*
U.S. Cl. 564—479 **16 Claims**

1. In a process for preparing an aliphatic amine having the formula (IV)

(IV)

wherein R_1 is a straight chain or branched chain, saturated or unsaturated aliphatic group having 7 to 23 carbon atoms, and R_2 and R_3 each is hydrogen or a straight chain or branched chain, saturated or unsaturated aliphatic group having 1 to 24 carbon atoms;

which comprises reacting an aliphatic alcohol or an aliphatic aldehyde having the formulas (I) or (II), respectively,



(II)

wherein R_1 is the same as defined above; with ammonia or a primary or secondary aliphatic amine having the following general formula (III)

(III)

wherein R_2 and R_3 are the same as defined above; at a temperature of 100° to 350° C., in the presence of a catalyst, the improvement which comprises: said catalyst is a homogeneous colloidal catalyst prepared by reducing with hydrogen or other reducing agent, a mixture of component A and component B wherein said component A is one member or a mixture of two or more members selected from the group consisting of inner complex salts of copper, inner complex salts of silver, carboxylates of copper and carboxylates of silver, and said component B is one member or a mixture of two or more members selected from the group consisting of inner complex salts of an element selected from the group consisting of the elements of Group VIII of the Periodic Table of Elements, manganese and zinc, and carboxylates of said element, with the proviso that among the two kind of components A and B, one component is an inner complex salt and the other is a said carboxylate.

4,254,061

PREPARATION OF MONOMETHYLAMINE

Frank J. Weigert, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 11, 1979, Ser. No. 74,418
Int. Cl.[3] C07C *85/06*
U.S. Cl. 564—479 **8 Claims**

1. Catalytic process for producing monomethylamine from methanol and ammonia, said process comprising reacting methanol and ammonia, in such amounts so as to provide a C/N ratio, from the methanol and ammonia reactants, of 0.5–1.5, over the catalyst selected from

(a) mordenite wherein the primary cation is Li, Na, HNa having at least 2% Na by weight, K, Ca, Sr, Ba, Ce, Zn or Cr
(b) ferrierite wherein the primary metal cation is Li, Na, K, Ca, Sr, Ba, Ce or Fe
(c) erionite ore
(d) calcium erionite and
(e) clinoptilolite ore,

at a temperature of 250°–475° C., a pressure of 7–7000 kPa, a contact time, normalized to 7 kPa pressure, of 0.1–60 seconds and a methanol conversion of 15–95%.

4,254,062

SEPARATION PROCESS

Raimund Wambach, Leverkusen; Sigurd Hartung, Cologne; Gerhard Reiss, and Lothar Puppe, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,501
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804203
Int. Cl.[3] C07C *25/02*
U.S. Cl. 570—211 **13 Claims**

1. A process for the separation of isomeric dichlorotoluenes which comprises passing a mixture of isomeric dichlorotoluenes over a zeolite of the X or Y type having a composition, expresses in terms of mol ratio or oxides, as follows:

$$(1.0\pm0.2)\ M_{2/n}O:\ Al_2O_3:\ w\ SiO_2$$

wherein
M is a cation of valency n and
w is a number from 2 to 6.

separated off non-adsorped dichlorotoluene and thereafter eluting adsorped toluene from said zeolite by contacting the so adsorped zeolite with an eluant, the adsorption and elution being carried in the liquid phase or in the gas phase at a temperature of 100° to 350° C.

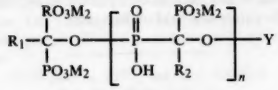
4,254,063

METHOD FOR PREPARING OLIGOMERIC ESTER CHAIN CONDENSATES OF SUBSTITUTED 1-HYDROXY-1,1-DIPHOSPHONIC ACID

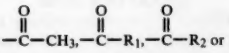
Larry W. Becker, Wilmington, Del., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 7, 1979, Ser. No. 36,462
Int. Cl.[3] C07F *9/40*
U.S. Cl. 260—931 **17 Claims**

1. A method for preparing a compound having the formula



where M is a water soluble cation; R_1 and R_2 each represent a group having the formula C_xH_{2x+1}; x is from 1 to and including 13; Y is



hydrogen, and n is 1 or greater so long as the compound is water soluble, which method comprises the steps of:

(1) adding an excess amount of acetic anhydride to the appropriate substituted 1-hydroxy-1,1-diphosphonic acid,

(2) continuing the reaction until it is at least substantially complete, and

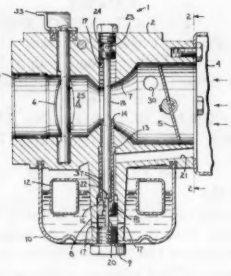
(3) separating the reaction product from the remaining reaction mixture.

4,254,064

CARBURETOR STARTING MIXTURE CONTROL

Lawrence J. Bernauer, Kohler, and Roger T. Gault, Wild Rose, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Aug. 2, 1979, Ser. No. 62,974
Int. Cl.[3] F02M *5/08*
U.S. Cl. 261—64 E **1 Claim**



1. In a carburetor for feeding fuel to an associated engine having a throat, a venturi constriction in said throat, a manually operable choke valve in said throat positioned upstream of said venturi, a throttle valve in said throat positioned downstream of said venturi, a fuel bowl with a fuel nozzle opening upon said venturi, and a bowl vent passage connecting said fuel bowl with the atmosphere, the combination comprising:

a duct opening upon said carburetor throat at a point downstream from said choke valve and permanently joining with said bowl vent passage to have communication (i) between said fuel bowl and the downstream side of said choke valve and (ii) between the end of said bowl vent passage venting to the atmosphere and the downstream side of said choke valve;

a tightly closed choke valve setting and a partially open throttle valve setting providing a rich fuel mixture for an associated engine upon an initial cranking to start the engine;

said duct acting upon an initial running of an associated engine and while the choke valve setting is closed (i) to transmit air pressure differences between the fuel bowl and carburetor throat to reduce richness of the fuel-air mixture, and (ii) to feed air from the atmosphere around said choke valve into said carburetor throat; and

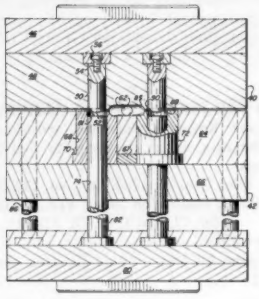
said bowl vent passage having a constricted air inlet communicating with the atmosphere that is of smaller constriction than the communication of said fuel bowl with said carburetor throat through said duct.

4,254,065

INJECTION MOLDING OF CONTACT LENSES

Donald J. Ratkowski, 1954 E. Glencove, Mesa, Ariz. 85203

Continuation of Ser. No. 834,234, Sep. 19, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 27,148
Int. Cl.[3] B29D *11/00*
U.S. Cl. 264—2.5 **4 Claims**



1. A method of making a first quality stress-free "hard" contact lens blank comprising:

(a) injecting a viscous plastic material into a mold having:

(i) a cavity plate and defining at least one cylindrical cavity bore for reception of a cavity pin;

(ii) cavity pin means disposed in said cavity bore, said cavity pin having one end defining a prescribed configuration at a first surface of the lens;

(iii) an injection section adapted to engage said cavity plate along a part-line, said ejection section defining a bore axially aligned with said cavity bore;

(iv) insert means in said cavity bore, said insert means defining a cylindrical opening adapted to receive at least the said end of said cavity pin means;

(v) ejection pin means extending in said insert means and having an end defining a prescribed configuration at a second surface of the lens, said cavity pin means, ejection pin means and said insert defining a mold cavity which is of fixed configuration during molding;

(b) controlling injection time, holding time, pressure, nozzle and mold temperatures approximately within the following prescribed limits while maintaining a fixed relationship in said mold cavity:

Injection Time—1 to 10 seconds
Hold Time—10 to 90 seconds
Injection Pressure (PSI)—2,500 to 15,000
Nozzle Temperature—400° to 530° F.
Material Temperature at Nozzle—370° to 530°0 F.;

(c) separating the cavity plate and injection section and ejecting the molded lens from the mold; and

(d) finishing the lens blank to a lens by an appropriate finishing step to impart the required optical characteristics with little or no finishing operations being required at the said first surface.

4,254,066
Patent Not Issued For This Number

4,254,067

SULPHUR PELLETIZING

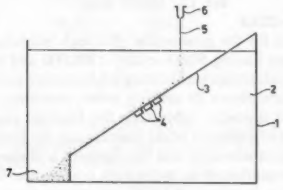
Herbert J. Elliott, 63 Poulton Estate, Bradford On Avon, Wiltshire, United Kingdom

Continuation of Ser. No. 664,619, Mar. 8, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 966,459

Claims priority, application United Kingdom, Jun. 3, 1975, 9386/75

Int. Cl.[3] B01J *2/02*

U.S. Cl. 264—13 22 Claims



1. Process for pelletizing sulfur which comprises

solidifying individual molten droplets of sulfur which correspondingly contain dispersed therewithin an effective minor amount of a mechanical strength improving modifying additive and which is sufficient for increasing the mechanical strength of the resultant solidified individual pellets as compared to that of the corresponding sulfur pellets which have been solidified without such additive being dispersed in the molten droplets.

4,254,068

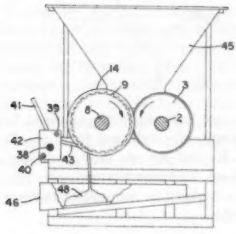
METHOD AND APPARATUS FOR REGENERATING FOAMED PLASTICS

Kazuo Otsuka, Tokyo, Japan, assignor to Otsuka Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 970,850

Int. Cl.[3] B29C *29/00*

U.S. Cl. 264—37 14 Claims



1. A process for regenerating foamed thermoplastic particulate material which comprises

feeding particles of foamed thermoplastic material from a feeding means onto a continuous surface, successive increments of which successively and repeatedly pass under said feeding means,

heating said continuous surface to a temperature above the melting point of said material,

moving said continuous surface past said feeding means until particles of said material fall upon material already fed onto said surface, whereby fresh particles of said material fall upon material already melted or partly melted,

heat-compressing the particles on said surface while melted under heating, and

removing said molten material from said continuous surface incrementally, transversely of the direction of motion of said surface past said feeding means.

4,254,069

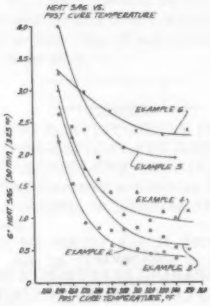
HEAT STABLE REACTION INJECTION MOLDED ELASTOMERS

Richard J. G. Dominguez, and Doris M. Rice, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

Filed Apr. 30, 1979, Ser. No. 35,025

Int. Cl.[3] B29D *27/04*

U.S. Cl. 264—51 12 Claims



1. A method of making a foamed polyurethane elastomer of improved properties which comprises injecting via a RIM machine into a mold cavity of the desired configuration a foam formulation, demolding the molded article and post curing the demolded article at a temperature from about 290° F. to 425° F. for a time sufficient to achieve an improvement in properties said formulation being the reaction product of an aromatic polyisocyanate, a polyol of above about 500 equivalent weight and a chain-extending agent comprising a low molecular weight active hydrogen containing component of at least two (2) functionality wherein the polyisocyanate and chain-extender are chosen from products which yield an isocyanate chain-extender reaction product with a glass transition temperature of above about 325° F. and wherein the polyol is chosen from those products which do not significantly adversely affect the glass transition temperature of the isocyanate chain-extender reaction product.

4,254,070

PROCESS FOR PRODUCING SINTERED BODY OF CERAMIC COMPOSITION FOR VOLTAGE NON-LINEAR RESISTOR

Masatada Yodogawa; Matsuo Morisawa; Takashi Yamamoto, and Katsunobu Okutani, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,401

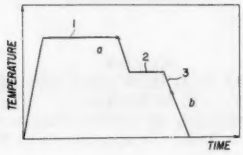
Claims priority, application Japan, Dec. 25, 1978, 53/161384

Int. Cl.[3] H01C *7/02;* C04B *33/34*

U.S. Cl. 264—61 10 Claims

1. A process for producing a sintered body of a ceramic composition for voltage non-linear resistor which comprises sintering an oxide semiconductor composition comprising a main component of zinc oxide and a minor component of another meter oxide at 1100° to 1400° C.; then soaking the

sintered body in an inert gas having an oxygen content of 0.1 to 21 vol.% for a specific time; changing the atmosphere into



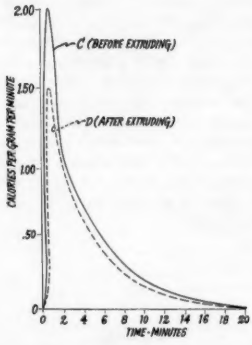
an inert gas having an oxygen content of lower than 0.02 vol.% at 800° to 1200° C.; and cooling it.

4,254,071

METHOD OF PREPARING ELECTROSTATIC COATING COMPOSITIONS CONTAINING AN EPOXY RESIN

Ralph G. Flowers; Frank S. Nichols, both of Pittsfield, and Robert P. Anderson, Dalton, all of Mass., assignors to General Electric Company

Filed Dec. 18, 1978, Ser. No. 970,249
Int. Cl.³ B29B 3/04
U.S. Cl. 264—102 **7 Claims**



1. A method for preparing an insulating coating for electrostatic powder application comprising the steps of:

preparing a coating premix consisting of a composition of resins including an epoxy resin and a curing agent selected from the group consisting of acid anhydrides and organometallic compounds

dehydrating the premix by heating within a first temperature range of from 25° C. to 125° C. to remove any moisture contained therein;

extruding the dehydrated premix through an extruder at a temperature range of 125° C. to 150° C. for providing a homogeneous mixture;

cooling the extruded mixture; and

grinding the extruded mixture into a powder.

4,254,072

PROCESS FOR HIGH MODULUS POLYMERIC MATERIALS

Giancarlo Capaccio, Leeds; Francis S. Smith, Harrogate, and Ian M. Ward, Bramhope, all of England, assignors to National Research Development Corp., London, England

Continuation of Ser. No. 860,999, Dec. 15, 1977, abandoned, which is a continuation of Ser. No. 553,656, Feb. 27, 1975, abandoned. This application Sep. 19, 1978, Ser. No. 943,855
Claims priority, application United Kingdom, Mar. 5, 1974, 09795/74
Int. Cl.³ D01D 5/12
U.S. Cl. 264—210.3 **10 Claims**

1. A process for the production of a high modulus filament of polyethylene having $50,000 < Mw < 200,000$ and $5,000 < Mn < 25,000$ which comprises heating high density polyethylene to a temperature above its melting point, extruding the polymer to form a filament, subjecting the filament immediately after extrusion to a tension while maintaining the filament at an elevated temperature such that the filament is shaped without substantial orientation of its molecules, cooling the filament at a rate of cooling in excess of 15° C. per minute to yield a spun filament having a birefringence of not more than 3×10^{-3} and a density of not more than 0.96 gm. per cc., and drawing the filament to a draw ratio of at least 20.

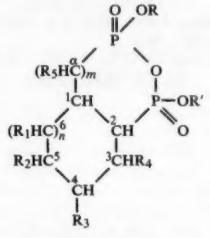
4,254,073

PYROPHOSPHONATES AND METHOD OF MAKING SAME

Vicki L. Hart, Jacksonville, Fla., assignor to SCM Corporation, New York, N.Y.

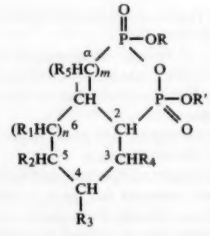
Filed Feb. 15, 1980, Ser. No. 122,026
Int. Cl.³ C07F 9/21
U.S. Cl. 260—927 R **19 Claims**

1. An intramolecular pyrophosphonate having the formula:



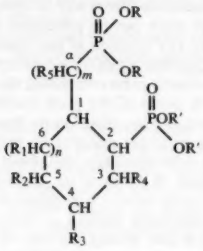
wherein n and m are independently selected from 0 and 1, R and R' are independently selected from C_1–C_6 alkyl groups and R_1, R_2, R_3, R_4 and R_5 are independently selected from hydrogen and C_1–C_6 hydrocarbyl groups.

9. A process for making an intramolecular pyrophosphonate having the formula:



wherein m and n are independently selected from 0 and 1, R, R' are independently selected from C_1–C_6 alkyl groups and R_1, R_2, R_3, R_4 and R_5 are independently selected from hydrogen

and C_1–C_6 hydrocarbyl groups, which comprises heating a diphosphonate having the formula:



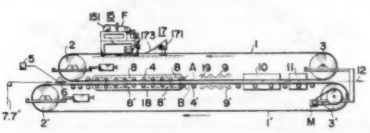
wherein m, n, R, R', R_1, R_2, R_3, R_4, and R_5 are defined as above, at a temperature in the range of 200°–300° C. for a period of from 0.5 to 10 hours.

4,254,074

CONTINUOUS PRODUCTION OF DECORATED SYNTHETIC RESIN SHEET

Yasuo Toyooka; Kunio Ohnishi; Haruo Murase, and Tadaomi Ueno, all of Toyama, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1979, Ser. No. 22,492
Claims priority, application Japan, Mar. 24, 1978, 53-33676
Int. Cl.³ B29D *7/14*
U.S. Cl. 264—132 **8 Claims**



1. A method for continuously producing synthetic resin sheet material having a synthetic resin film integrally blended with the sheet material, said method comprising feeding a polymerizable synthetic resin syrup to the entrance of the casting space formed by the continuously traveling endless belts of a continuous casting machine, said belts having mutually parallel interspaced belt spans forming said space, and continuously feeding to the surface of at least one of said belts a preformed synthetic resin film that is carried by the belt into said entrance into contact with said syrup and travels through the space with the syrup, said film being compatible with said syrup so as to soften and at least partially dissolve in and blend with said syrup, said belts being heated so as to polymerize said syrup and produce said sheet material as a continuously traveling strip leaving said machine.

4,254,075

METHOD FOR FORMING HOLES IN A MEMBER

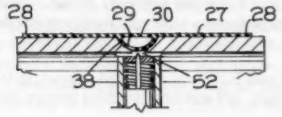
S. W. O. Menzel, Adelaide, Australia, and David E. Mominee, Alpine, Calif., assignors to Reed Irrigation Systems, El Cajon, Calif.

Filed Mar. 23, 1978, Ser. No. 889,418
Claims priority, application Australia, Apr. 1, 1977, PC9638
Int. Cl.³ B28B *1/48*
U.S. Cl. 264—154 **16 Claims**

1. The method of forming holes in a plastic member which comprises:

(a) advancing a smooth shaft having a smooth surface with the shaft spinning about its axis into and through the member while maintaining a rate of rotation sufficient to cause the plastic material of the member to fluidize due to the contact of the said smooth surface of the shaft with the same member with at least some of the fluidized material being in flowable form as the result of heat generated by friction due to said contact whereby to displace said material from the area of operation of the said shaft,

(b) moving the said shaft from the hole so formed while maintaining the said flowable form of the plastic material between the shaft and the wall of the hole by substantially



retaining the rate of rotation of the said shaft while moving it from the hole so formed,

(d) allowing the plastic material in flowable form on the member around the said hole to solidify, and

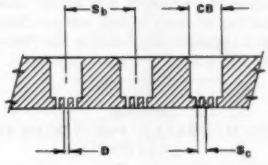
(d) removing at least some of any material adhered to the periphery of the shaft.

4,254,076

MELT-SPINNING ACRYLONITRILE POLYMER FIBER USING SPINNERETTE PLATE WITH MULTIPLE CAPILLARIES PER COUNTERBORE

Ronald E. Pfeiffer, Pensacola, and Stanley E. Peacher, Milton, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 938,202, Aug. 30, 1978. This application Jun. 20, 1979, Ser. No. 50,360
Int. Cl.³ D01F *6/18*
U.S. Cl. 264—206 **5 Claims**



1. A process for melt-spinning fiber which comprises providing a homogeneous fusion melt of a fiber-forming acrylonitrile polymer and water at a temperature above the boiling point of water at atmospheric pressure and at a temperature and pressure which maintains water and said polymer in a single melt phase and extruding said fusion melt through a spinnerette plate having a plurality of counterbores and within each counterbore, at least about 3 capillaries, said capillaries having a density of at least about 18 per square centimeter of plate surface, said extrusion being directly into a steam-pressurized solidification zone maintained under conditions such that the rate of release of water from the nascent extrudate avoids deformation thereof.

4,254,077

METHOD FOR MAKING DECORATIVE INLAID CONCRETE BLOCKS

John D. Fontana, 21 Pine Ridge Dr., Smithtown, N.Y. 11787, and Louis R. Fontana, 150 S. Snedecor Ave., Bayport, N.Y. 11705

Continuation-in-part of Ser. No. 920,478, Jun. 29, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,629
Int. Cl.³ B29C *1/02*
U.S. Cl. 264—225 **9 Claims**

1. A method of making a concrete block with a decorative inlay comprising:

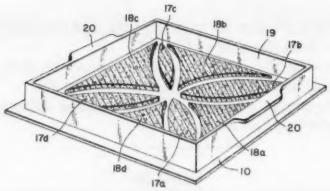
making first and second charges of concrete with different

degrees of wetness with the second charge being substantially wetter than the first charge and having about fifty to one hundred percent more water than said first charge;

placing a first form configured to define an inlay pattern on a support;

filling said first form with said first charge of concrete, compacting said first charge of concrete and allowing said first charge to harden with only partial curing so that said first charge forms a relatively rigid, self-standing concrete pattern corresponding to the configuration of said first form;

removing said first form from said support leaving the relatively rigid, self-standing concrete pattern thereon;



placing a second form, which is configured and dimensioned to encompass said concrete pattern, on said support such that it surrounds said concrete pattern;

filling said second form with the second charge of concrete until at least the lateral edges of said concrete pattern are surrounded by said second charge of concrete whereby said second charge of concrete bonds to said concrete pattern and forms therewith a concrete block, the relatively rigid self-standing configuration of said first charge remaining intact upon addition of said second charge, the greater degree of wetness of said second charge of concrete permitting leaching of said second charge into said first charge to promote the bonding therebetween; and

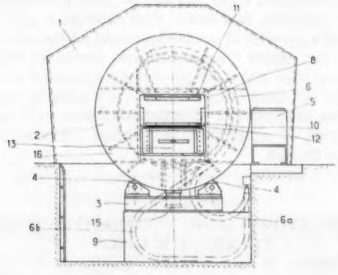
curing at least the second charge of concrete.

4,254,078

REVOLVING HYDRAULIC PRESS WITH HEATED PLATEN

Guy A. L. Huntzinger, Strasbourg, France, assignor to Forges de Strasbourg, France

Filed Nov. 20, 1978, Ser. No. 962,134
Claims priority, application France, Nov. 21, 1977, 77 35298
Int. Cl.[3] B30B *11/02*
U.S. Cl. 264—320 **6 Claims**



1. In a hydraulic press for heating and forming moldable material into a hub for a helicopter rotor and the like comprising a press assembly having a frame with a vertical face and a pair of mold-receiving heating plates mounted on the frame in confronting relationship, a support mounting the press assembly, means for closing the assembly and control means for controlling the operation of the assembly, the combination including means for rotating said frame through an angle of at least 180° around an axis perpendicular to said vertical frame face, said heating plates in their mold-receiving condition being positioned equidistant from and on opposite sides of said axis whereby each plate can be positioned within the same horizontal plane by 180° rotation of said frame.

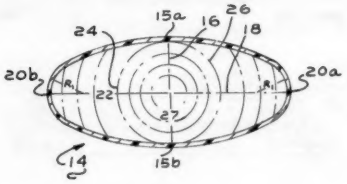
6. A method of forming a hub for a helicopter rotor and the like in a heated hydraulic press comprising the steps of initially heating the heating plates of the press assembly; positioning one of a pair of confronting plates in its lowermost position; loading and fixing moldable material on said one positioned plate; rotating the press assembly 180° about its axis to bring the other of the pair of plates to its lower-most position in registry with the stock receiving position of said one plate; loading and fixing moldable material on said other plate while in its lowermost position; closing the pair of plates, applying pressure and an increase in temperature to the material held by said plates to effect polymerization and formation of said hub, and subsequently cooling and ejecting said hub from said press.

4,254,079

FORMING NON-CYLINDRICAL ARTICLES FROM PREFORMS OF POLYALKYLENE TEREPHTHALATE

Purushottam D. Agrawal, Galesferry, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 20, 1978, Ser. No. 971,398
Int. Cl.[3] B29C *17/07*
U.S. Cl. 264—537 **9 Claims**



1. In the method of forming a molecularly oriented hollow article having a non-round cross section of substantially oval or substantially triangular or like cross section from a preform of thermoplastic material, which includes distending the preform in a mold while at molecular orientation temperature,

the improvements wherein the thermoplastic material is moldable polyalkylene terephthalate having an inherent viscosity of at least about 0.55, said preform region forming said cross section is not treated before said distending for the purpose of establishing a circumferential temperature difference therein, and the distending comprises, in combination, the steps of:

expanding first portions of said region against mold wall portions at the end of a minor axis of a cavity conforming to said non-round cross section to form relatively thick sections thereat while expanding other portions a greater extent than said first portions toward wall portions at the end of a major axis of said cavity thereby establishing a strain hardened pattern in the material wherein such expanded other portions are strain hardened greater than said thick sections; and

drawing material out of said thick sections as such expanded other portions of greater strain hardened level continue to expand toward the mold wall portions at the end of the major axis;

limiting the corner definition ratio to between about 3 to about 9 and the circular deviation ratio to no greater than about 2.4 at the cross section during said distending;

and controlling said distending according to the relations:

% average axial stretch (A) =

-continued

$$\% \text{ axial stretch } (A) = \frac{\text{article length minus preform length times 100}}{\text{preform length minus preform neck finish length}}$$

$$\% \text{ maximum radial stretch } (B) = \frac{\text{maximum planar distance to mold from preform axis minus preform outside diameter times 100}}{\text{preform outside diameter}}$$

wherein:

A is between about 15 to about 100; and

B is no greater than about 334; thereby forming said article having reduced wall thickness variability at the non-round cross section in comparison with an article having the same cross section formed of thermoplastic material which does not strain harden during distension.

4,254,080

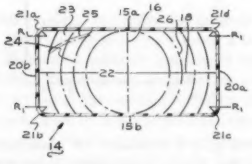
FORMING SUBSTANTIALLY RECTANGULAR ARTICLES FROM PREFORMS OF POLYALKYLENE TEREPHTHALATE

Purushottam D. Agrawal, Galesferry, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 27, 1979, Ser. No. 23,941

Int. Cl.[3] B29C *17/07*

U.S. Cl. 264—537 **9 Claims**



1. In the method of forming a molecularly oriented hollow article having a substantially rectangular cross section from a preform of thermoplastic material, which includes distending the preform in a mold while at molecular orientation temperature,

the improvements wherein the thermoplastic material is moldable polyalkylene terephthalate having an inherent viscosity of at least about 0.55, said preform region forming said cross section is not treated before said distending for the purpose of establishing a circumferential temperature difference therein, and the distending comprises, in combination, the steps of:

expanding first portions of said region against mold wall portions at the end of a minor axis of a cavity conforming to said substantially rectangular cross section to form relatively thick sections thereat while expanding other portions a greater extent than said first portions toward wall portions at the end of a major axis of said cavity thereby establishing a strain hardened pattern in the material wherein such expanded other portions are strain hardened greater than said thick sections; and

drawing material out of said thick sections as such expanded other portions of greater strain hardened level continue to expand toward the mold wall portions at the end of the major axis;

limiting the corner definition ratio to between about 2 to about 14 and the circular deviation ratio to no greater than about 2.4 at the cross section during said distending; and

controlling said distending according to the relations:

$$\% \text{ axial stretch } (A) = \frac{\text{article length minus preform length times 100}}{\text{preform length minus preform neck finish length}}$$

$$\% \text{ maximum radial stretch } (B) = \frac{\text{maximum container outside diameter minus minimum preform outside diameter times 100}}{\text{minimum preform outside diameter}}$$

wherein:

A is between about 5 to about 100; and

B is no greater than about 334; thereby forming said article having reduced wall thickness variability at the substantially rectangular cross section in comparison with an article having the same cross section formed of thermoplastic material which does not strain harden during distension.

4,254,081

BLOOD OXYGENATOR

Michael V. Streczyn, Huntington Beach; Ronald B. Luther, Newport Beach, and Daniel L. Doyle, Murietta, all of Calif., assignors to Research Partners Limited, Hayward, Calif.

Filed Sep. 21, 1979, Ser. No. 77,661

Int. Cl.[3] A61M *1/03*

U.S. Cl. 422—46 **19 Claims**

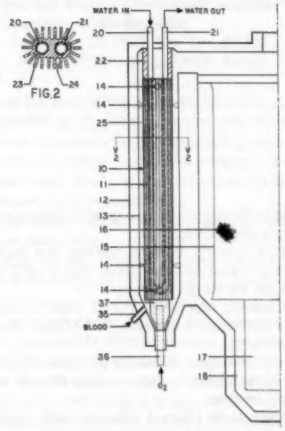


FIG.2

1. A blood oxygenator, comprising:

(a) i. a heat exchanger including an upright, longitudinal tubular body member formed from an integral aluminum extrusion;

ii. a passageway within the tubular member for movement of a heat exchange fluid;

iii. a plurality of parallel-like, generally radially directed, heat exchange fins formed longitudinally of the tubular member and along its exterior;

iv. a plurality of channels, each defined between adjoining heat exchange fins and the tubular body, the channels being adapted for an unimpeded, upward flow of blood and oxygen in heat exchange relationship with the fluid, whereby the blood becomes oxygenated, the fins stabilizing the blood flow, thereby reducing hemolysis and improving oxygenation;

(b) a reservoir surrounding the fins, the reservoir being adapted to contain the blood surrounding the heat exchanger;

(c) a venous blood inlet to the reservoir for supplying to the reservoir, CO_2 rich blood for O_2 exchange;

(d) an inlet sparger to the reservoir for supplying oxygen to the blood;

(e) a defoamer means for defoaming and collecting oxygenated and degassed blood from the reservoir;

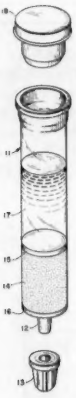
(f) vent means for releasing CO_2 and miscellaneous gases from the defoamer; and
(g) an outlet for the oxygenated blood.

4,254,082

SPECIFIC BINDING-ADSORBENT ASSAY TEST MEANS

Lloyd A. Schick, and Stephen K. Carpenter, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 786,207, Apr. 11, 1977, Pat. No. 4,145,406. This application Jun. 12, 1978, Ser. No. 914,565
Int. Cl.³ G01N *33/50, 31/06*
U.S. Cl. 422—55 **22 Claims**



1. Test means for determining a specific binding substance in a liquid sample comprising
(a) a labeled specific binding partner for said substance having a pI value different from that of said substance;
(b) a solid ion exchange adsorbent
(i) of an anionic type when the pI value of said substance to be determined is less than that of said labeled binding partner, or
(ii) of a cationic type when the pI value of said substance to be determined is greater than that of said labeled binding partner.

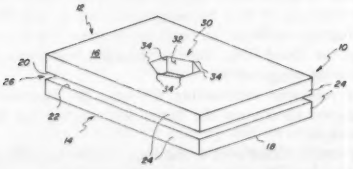
3. Test means as in claim 1 wherein said specific binding partner is labeled with a radioactive material.

4,254,083

STRUCTURAL CONFIGURATION FOR TRANSPORT OF A LIQUID DROP THROUGH AN INGRESS APERTURE

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 954,689, Oct. 25, 1978. This application Jul. 23, 1979, Ser. No. 59,924
Int. Cl.³ G01N *33/00, 33/48*
U.S. Cl. 422—55 **19 Claims**



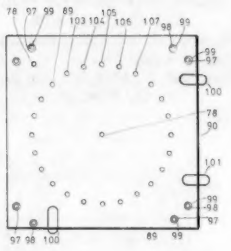
1. In a liquid transport device comprising an exterior, drop-receiving surface, means interior of said surface for transporting the liquid through a zone, and an ingress aperture comprising an internal sidewall fluidly connecting said surface and said interior transporting means,
the improvement wherein at least the intersection of said exterior surface and said sidewall includes at a predetermined location, means for substantially urging a portion of a drop of liquid deposited thereon to move into contact with said sidewall, said urging means including a surface configuration capable of forming a compound meniscus on a contacting liquid drop.

4,254,084

METHOD AND APPARATAUS FOR AUTOMATIC ISOENZYME ANALYSIS

Alvin S. Blum, 2350 Del Mar Place, Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 898,998, Apr. 21, 1978. This application Dec. 13, 1978, Ser. No. 968,907
Int. Cl.³ G01N *33/56, 35/08, 21/05*
U.S. Cl. 422—81 **21 Claims**



1. Laminated optical apparatus for photometric analysis of fluid in a moving stream comprising: upper transparent plate means; lower transparent plate means; opaque center plate means having a plurality of holes therethrough, said holes providing passages for said moving fluid and also providing the lateral walls of a series of optical measuring cells; fluid inlet means for admitting said moving fluid stream into said optical apparatus for measurement of the optical properties of said fluid, said fluid inlet means being fastened into one of said holes in said center plate means; fluid outlet means for removal of said moving fluid stream from said cells after said measurement, said fluid outlet means being fastened to one of said holes in said center plate means; thin plate means disposed on both sides of said center plate means between said upper transparent plate means and the upper face of said center plate means on one side and between said lower transparent plate means and the lower face of said center plate means on the other side, said thin plate means having shaped slots, said slots in combination with the faces of said transparent plate means and the faces of said center plate means forming fluid flow channels connecting said fluid inlet means, said fluid outlet means, and said holes in said center plate means, thereby providing a continuous fluid flow pathway from said fluid inlet means through a series of optical measurement cells to said fluid outlet means, said optical measurement cells being formed by said upper and lower transparent plate means serving as common end windows and said holes in said center plate means and said slots in said thin plate means serving as individual tubular optical cell bodies; upper mask clamp plate means and lower mask clamp plate means positioned against upper transparent plate means and lower transparent plate means respectively, said clamp plate means being opaque and rigid and having holes therethrough to register with corresponding optical measurement cells for passage light, with additional holes for positioning and clamping bolt means for clamping all the aforesaid plate means together in a fluid and light tight manner, thereby facilitating assembly and disassembly for cleaning; light source means disposed on one side of said optical cells; light measuring means disposed on another side of said optical cells;

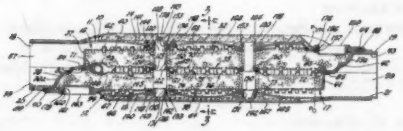
and data processing means connected to said light measuring means to process light measurement information into useful form.

4,254,085

CATALYTIC CONVERTER WITH DUAL CATALYST PELLET BEDS AND REINFORCED PLENUM THEREBETWEEN

John R. Wilson, Jr., Flint, and Earl W. Pierce, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1980, Ser. No. 128,272
Int. Cl.³ B01J *8/04;* **F01N** *3/28, 3/34*
U.S. Cl. 422—171 **2 Claims**



1. In a dual bed catalytic converter for internal combustion engine exhaust gases and of the type having a housing comprised of two sheet metal parts cooperatively enclosing and cooperatively forming an inlet and an outlet for a pair of catalyst pellet beds arranged face-to-face between the inlet and outlet wherein each of the beds is comprised of two sheet metal parts having louvers with the periphery of the outer part of each bed sandwiched between and sealingly fixed to the housing parts and with the inner part of each bed sealingly mating with that of the other to form an air plenum between the beds and wherein mating portions of the inner bed parts extending between the inlet and outlet are clamped but slidably movable between the outer bed parts while the remaining mating portions of the inner bed parts extending transverse of the respective inlet and outlet engage on only their inner bed side against an internal shoulder on the respective outer bed parts to completely separate the pellets in the beds: the improvement comprising in combination, a single extension integral with and extending outwardly from each of the inner bed parts toward either the inlet or outlet, the extension on each of the inner bed parts being clamped but slidably movable between the outer bed parts so as to trap the other inner bed part against the shoulder which the latter engages whereby the inner bed parts are completely peripherally supported but slidably movable between the outer bed parts.

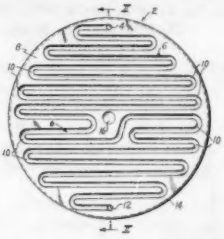
4,254,086

ENDOTHERMAL WATER DECOMPOSITION UNIT FOR PRODUCING HYDROGEN AND OXYGEN

Alfred P. Sanders, 17602 Point Comfort La., Webster, Tex. 77598

Filed Dec. 27, 1978, Ser. No. 973,578
Int. Cl.³ B01J *10/00;* **B01D** *53/22, 59/10;* **B32B** *3/30*
U.S. Cl. 422—187 **13 Claims**

1. A coated article comprising a porous refractory base material with a hydrogen permeable membrane coated on portions thereof, said base material having at least first and second flat surfaces, said base material having a top and a bottom, a hole extending through said base material at the top thereof, a grooved maze in at least one of said flat surfaces extending from said hole at the top of the bottom and said



grooved maze coated with said hydrogen permeable membrane.

4,254,087

EXTRACTION OF COPPER, NICKEL AND COBALT USING ALKYLAROMATIC SULFONIC ACIDS AND CHELATING AMINES

Robert R. Grinstead, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 25, 1979, Ser. No. 60,256
Int. Cl.³ C01G *3/00, 51/00, 53/00*
U.S. Cl. 423—24 **10 Claims**

1. A process for recovering a first metal value selected from the group consisting of cobalt, copper and nickel from an acidic, aqueous ore leach liquor containing said first metal value and a second metal value, the process comprising (1) contacting said leach liquor at a pH of below about 3.5 with a solvent-extractant system comprising:

(a) an alkylaromatic sulfonic acid having a molecular weight of at least about 400,

(b) a chelating amine wherein the pKa value for the amine group is in the range of from about 3 to about 9 and further having at least two coordinating centers in the molecule, at least one such center being a ring nitrogen, and

(c) a water-immiscible diluent for (a), (b) and metal complexes of (a) and (b) to provide a solution of the first metal value in the extractant, said combination of (a) and (b) being characterized as having superior selectivity for said first metal value over (b) alone, (2) separating the thus-formed solution from the aqueous raffinate depleted in the first metal value, and (3) recovering the first metal value from the separated solution.

4,254,088

SALT-SODA SINTER PROCESS FOR RECOVERING ALUMINUM FROM FLY ASH

William J. McDowell, and Forest G. Seeley, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 27, 1979, Ser. No. 24,339
Int. Cl.³ C01F *7/08*
U.S. Cl. 423—112 **2 Claims**

1. A method for recovering aluminum values from fly ash which comprises sintering the fly ash with a mixture of NaCl and Na_2CO_3 at a weight ratio of $NaCl/Na_2CO_3$ and at a sintering medium to fly ash weight ratio of at least 1 to a temperature in the range 700°–900° C., mixing the sintered mixture with water to selectively dissolve NaCl and Na_2CO_3 and produce a water-insoluble aluminum fraction and then contacting the aqueous insoluble aluminum fraction with an aqueous solution of nitric or sulfuric acid to effect dissolution of aluminum and other metal values in said solution.

4,254,089

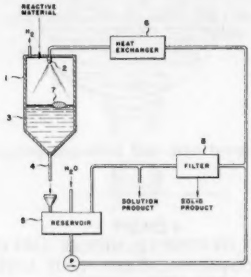
PRODUCT RECOVERY FROM ALKALI METAL WASTES

Donald J. Levy, Mountain View, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 849,975, Nov. 9, 1977. This application Oct. 29, 1979, Ser. No. 89,082

Int. Cl.[3] C01D *1/04*

U.S. Cl. 423—179 7 Claims



1. A method for converting at least one reactive material selected from the group consisting of sodium sludge and materials which contain sodium, lithium or potassium metal into its respective metal hydroxide comprising the steps of

floating the material on a bath of a metal hydroxide solution which cools the underside of said material, said metal hydroxide being the hydroxide of said reactive material,

maintaining an essentially oxygen-free atmosphere in contact with the topside of said material,

cooling the topside of said material by a spray of said solution, and

maintaining a relative flow between said material and said solution by said spray which flows past the underside of said material.

4,254,090

COMBINED SYNTHESIS OF HYDRAZINE AND HYDROGEN PEROXIDE

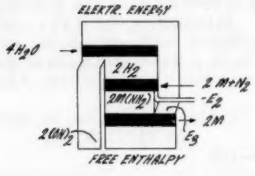
Reinhart Radebold, Quastenhornweg 14a, 1 Berlin 22, and Werner Seiler, Bondickstrasse 67d, 1 Berlin 28, both of Fed. Rep. of Germany

Filed Nov. 25, 1977, Ser. No. 854,771

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654514

Int. Cl.[3] C01B *21/16*

U.S. Cl. 423—407 5 Claims



1. Method of a combined synthesis of hydrazine and hydrogen peroxide, under utilization of water and nitrogen, comprising:

electrolytically generating an electron donor and an electron acceptor in the form of an alkali metal and its peroxide by way of electrolysis of alkali-oxide carried out at an elevated temperature;

reacting a first portion of the alkali-peroxide with water to produce the hydrogen-peroxide by hydrolisis, alkali-hydroxide being an additional reaction product;

reacting a second portion of the alkali-peroxide with molten alkali-amide to produce hydrazine and first alkali-oxide;

using some of the alkali metal as produced pursuent to the said generating step, as well as requisite quantities of nitrogen and hydrogen, to produce the alkali amide;

generating the hydrogen to be used in the preceding step from the alkali-hydroxide and some of the alkali metal as generated, resulting in second alkali-oxide;

and using said first and second alkali-oxide in the electrolytic generating step.

4,254,091

DIAMOND SYNTHESIS

Eduard Woermann, Joseph Ponten Str. 57, Aachen; Barbara Knecht, Beutinger Str. 16, Heilbronn, and Matthias Roshenhauer, Alfred Messel Weg 14 A., Darmstadt, all of Fed. Rep. of Germany

Continuation of Ser. No. 904,437, May 9, 1978, abandoned. This application Aug. 16, 1979, Ser. No. 67,172

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721644

Int. Cl.[3] C01B *31/06*

U.S. Cl. 423—446 7 Claims

1. A method for the synthesis of diamonds, which method includes the steps of heating at least one carbon-containing compound selected from the group consisting of $FeCO_3$, $MnCO_3$, $MgCO_3$, $CaCO_3$ and $Fe(COO)_2$ to a temperature in the range of 550° to 1600° C. in the presence of a reducing agent for the carbon-containing compound selected from the group consisting of $FeCO_3$, FeO, MnO, Fe and Cr, while maintaining a pressure in the range of 29 to 45 Kilobars, and controlling temperature and pressure so that the pressure in atmospheres is greater than $7000+27\ T$, where T is the temperature in degrees Kelvin, whereby elementary carbon is freed from the carbon-containing compound in the diamond form.

4,254,092

METHOD FOR SEPARATING HYDROGEN CHLORIDE AND HYDROGEN BROMIDE

Alfred Coenen; Kurt Kosswig, and Ekkehard Wienhöfer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Filed Aug. 7, 1979, Ser. No. 64,370

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836580

Int. Cl.[3] C01B *7/07, 7/09*

U.S. Cl. 423—497 16 Claims

1. A method for separating a first mixture of hydrogen chloride and hydrogen bromide as a function of the difference in the stability to heat of amine hydrobromides and amine hydrochlorides, comprising:

(a) treating said first mixture with a solution of an amine and producing a second mixture of amine hydrochlorides and amine hydrobromides;

(b) heating said second mixture to a temperature at which the amine hydrobromides are stable to heat and the corresponding amine hydrochlorides are no longer stable to heat and splitting off hydrogen chloride;

(c) separating off said hydrogen chloride in the gaseous phase and leaving said amine hydrobromides in the liquid phase;

(d) treating said amine hydrobromides in the liquid phase with a base to remove said hydrogen bromide as a bromine salt; and

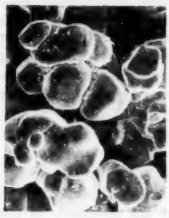
(e) recovering said bromine salt.

4,254,093

SOLAR ENERGY GRADE CADMIUM SULFIDE

Sixdeniel Faria, and Vincent Chiola, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 9, 1976, Ser. No. 740,208
Int. Cl.[3] C01B *17/00;* H01L *31/00;* H01B *1/06*
U.S. Cl. 423—561 B 2 Claims



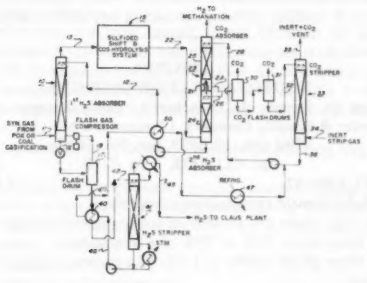
1. A solar energy grade cadmium sulfide composition consisting essentially of discrete particles of hexagonal cadmium sulfide, having an average particle size of from about 8 to about 25 micrometers, a bulk density of from about 1.7 to about 1.9 grams per cubic centimeter, below about 150 ppm of anionic impurities, below about 20 ppm of cationic impurities and below about 100 ppm of volatile impurities.

4,254,094

PROCESS FOR PRODUCING HYDROGEN FROM SYNTHESIS GAS CONTAINING COS

William P. Hegarty, Wescosville, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 19, 1979, Ser. No. 22,015
Int. Cl.[3] C01B *1/16, 1/26*
U.S. Cl. 423—648 R 22 Claims



1. In the process of desulfurizing, shifting and decarbonizing a contaminated synthesis gas stream, obtained by gasification of coal or heavy hydrocarbon oil, to obtain a purified hydrogen rich stream, said synthesis gas stream containing among contaminants therein H_2S, COS, CO and CO_2; the improvement which comprises: effecting such desulfurizing with organic solvent in two physical absorption stages, wherein said synthesis gas stream in the first absorption stage is contacted with organic liquid solvent under conditions effecting physical absorption therein of the major portion of the H_2S in said stream but not more than up to about 65% of the COS; introducing the gaseous effluent from the first absorption stage containing unremoved COS to shift reaction with water over sulfide-resistant shift catalyst to convert CO therein to CO_2 and hydrogen, while hydrolyzing the COS therein to form H_2S; subjecting the products of said shift reaction to the second absorption stage for removal of essentially all of the contained residual sulfide gases therefrom by physical absorption in an organic solvent; and utilizing the rich sulfide-containing solvent from said second absorption stage for said contacting of the synthesis gas stream in the first absorption stage.

4,254,095

RADIOIMMUNOASSAY FOR ERYTHROPOIETIN

James W. Fisher, and Arvind B. Rege, both of New Orleans, La., assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 892,807, Apr. 3, 1978, abandoned. This application Apr. 27, 1978, Ser. No. 900,580
Int. Cl.[3] G01N *33/48;* G01T *1/00;* C01G *7/00;* B65D *7/00*
U.S. Cl. 424—1 53 Claims

1. In a radioimmunoassay of erythropoietin comprising
(a) reacting binder containing a fixed number of antibody binding sites with a mixture of labelled and unlabelled erythropoietin;
(b) separating bound erythropoietin from free erythropoietin; and
(c) determining the percent labelled erythropoietin bound; the improvement comprising the use of labelled erythropoietin prepared by the conjugation labelling technique wherein the labelled erythropoietin has been purified by immunosorption with anti-erythropoietin antiserum that has been preadsorbed with human proteins that are low in erythropoietin content.

4,254,096

REAGENT COMBINATION FOR SOLID PHASE IMMUNOFLUORESCENT ASSAY

James F. Monthony, Albany; Michael W. Burgett, Half Moon Bay, and Robert V. Dahlstrom, San Rafael, all of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Division of Ser. No. 875,475, Feb. 6, 1978, Pat. No. 4,201,763, which is a continuation of Ser. No. 621,197, Oct. 9, 1975, abandoned. This application Oct. 4, 1979, Ser. No. 81,741
Int. Cl.[3] G01N *33/52, 33/54*
U.S. Cl. 424—8 6 Claims

1. An immunological reagent combination for use in an immunofluorescent assay comprising:
(a) a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto an immune reactant immunologically related to an unknown immune reactant to be determined; and
(b) fluorescently labeled immune reactant immunologically related to said unknown,
said particles and said fluorescently labeled immune reactant being in relative proportion for optimally carrying out an assay method comprising the steps of providing a plurality of water insoluble hydrophilic polymeric particles of about 0.1–10 microns in size which form a substantially homogeneous aqueous suspension and having covalently bonded thereto an immune reactant to be determined, providing a sample of unknown immune reactant to be determined, providing an appropriate amount of fluorescently labeled immune reactant immunologically related to said unknown, reacting said particles, sample, and labeled immune reactant to immunologically bind said particles in aqueous solution with a quantity of said labeled immune reactant proportional to the concentration of said unknown, physically separating all of said particles from said aqueous solution thereby separating the particles from unbound labeled immune reactant remaining in the aqueous solution, and measuring the fluorescence of an aqueous suspension of said separated particles by fluorometry, the fluorescence of labeled immune reactant bound to said particles being quantitatively related to the concentration of said unknown immune reactant.

4,254,097

METHOD OF DETECTING ANTIBODIES TO HUMAN THYROGLOBULIN

Delfin F. Rippe, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 911,865, Jun. 2, 1978. This application Nov. 5, 1979, Ser. No. 90,954

Int. Cl.[3] G01N *33/52, 33/68*

U.S. Cl. 424—8 1 Claim

1. A method for detecting antibodies to human thyroglobulin in serum comprising:

A. incubating an insoluble conjugate of methylated bovine serum albumin and human thyroglobulin with a serum from a patient for a sufficient period of time, thereby forming a serum flocculate;

B. washing said serum flocculate mixture and separating therefrom the supernatant fluid;

C. adding a fluorescein labeled anti-immunoglobulin antibody to the washed flocculate and incubating the labeled mixture for a sufficient period of time;

D. washing said incubated flocculate and separating therefrom the supernatant fluid; and

E. suspending the flocculate in a washing medium and determining the fluorescence thereof, which is proportional to the concentration of antibodies to said human thyroglobulin.

4,254,098

COMPOSITION FOR PROPHYLACTIC TREATMENT OF PINKEYE

Joseph A. Graham, Jr., Milo, Iowa, and Clair R. Hibbs, Albuquerque, N. Mex., assignors to Clair M. Hibbs; Kenneth R. Wilburn and Max. A. Mekus, part interest to each

Filed Jan. 28, 1980, Ser. No. 115,666

Int. Cl.[3] A61K *39/02, 9/22*

U.S. Cl. 424—14 9 Claims

1. A medicament for the treatment of the eyes of bovine comprising a biologically inert, bioerodible, nonallergenic, insoluble carrier and an amount of an attenuated strain of *Moraxella bovis* effective to induce immunity to pinkeye in said cattle,

wherein the unattenuated strain of said *Moraxella bovis* causes pinkeye in bovine.

4,254,099

PHARMACEUTICAL TABLET COMPOSITION

Bodo Asmussen, Ammersbek, and Georg A. Ulex, Moorrege, both of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,900

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845326

Int. Cl.[3] A61K *9/20, 31/705, 47/00*

U.S. Cl. 424—23 17 Claims

1. A pharmaceutical composition in tablet form for oral administration providing for accelerated release of digoxin contained therein comprising a microdispersed, amorphous, porous silica having a primary particle size of between 1 and 15 μm, a BET surface of between about 350 and 450 m^2/g, and a pore volume of between about 1.4 and 1.7 ml/g having absorbed thereon said active ingredient in finely divided form.

4,254,100

VITAMIN A COMPOSITIONS

Hans E. Keller, and Heinrich Klaeui, both of Riehen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 885,984, Mar. 13, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,078

Claims priority, application Switzerland, Mar. 25, 1977, 3811/77

Int. Cl.[3] A61K *9/40, 9/32, 9/34, 31/07*

U.S. Cl. 424—37 11 Claims

1. A process for the preparation of dry, free flowing beadlets containing microcrystalline vitamin A acetate which exhibits excellent vitamin A stability without containing any antioxidants and which comprises

(a) homogenizing with sufficient high shear force to obtain particle sizes of from about 0.5μ to about 50μ of molten or wet-milled vitamin A acetate in an aqueous solution containing from about 0.1% to about 5% by weight, based on the weight of the solution, of an edible, water-soluble carrier composition selected from the group consisting of gelatin, gum arabic, pectin, sugar, tragacanth, alginates, guar sperm meal, methylcellulose, sodium carboxymethyl cellulose, modified starch, sodium ascorbyl palmitate, a polyoxyalkylene derivative of sorbitan monostearate, mixtures of glycerol mono- annd di-ricinoleates with polyoxyethylene glycol ether groups and monoricinoleic esters of polyethylene glycol;

(b) cooling the resulting emulsion to about 15° C. while continuing the homogenization technique until such particle size ranges are obtained, of completely crystalline vitamin A acetate microcrystals;

(c) separating the completely crystallized microcrystalline vitamin A acetate from the liquid medium by centrifugation;

(d) adding the microcrystalline vitamin A acetate to a gelatin/sugar solution wherein the ratio of gelatin to sugar is about 3 to 1;

(e) heating the resulting mixture to from about 40° to about 50° C. with vigorous stirring to suspend the microcrystals;

(f) adding the resulting microcrystal suspension of step (e) to an oil which has been heated to 45° C. using sufficient stirring to form fine droplets;

(g) cooling the resultant mixture with stirring to from about 5° to about 15° C. to solidify the droplets;

(h) washing the beadlets with a solvent for the oil;

(i) separating the beadlets from the suspension medium, and

(j) drying the beadlets

to thus form dry, free-flowing beadlets containing vitamin A acetate in microcrystalline form and which exhibit excellent vitamin A stability without containing any antioxidants.

4,254,101

TOOTHPASTE COMPOSITIONS

William D. Denny, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 15, 1979, Ser. No. 84,486

Int. Cl.[3] A61K *7/16, 7/18*

U.S. Cl. 424—52 7 Claims

1. A toothpaste composition comprising:

(A) from about 6% to 45% of a silica dental abrasive;

(B) from about 30% to 70% of a humectant;

(C) from about 0.03% to 1.0% of a carboxyvinyl polymer; and

(D) from about 10% to 45% of water;

said composition providing a pH of from about 4.0 to 8.0 when slurried with water in a 3:1 water/composition weight ratio.

4,254,102

SUBSTANTIVE PABA COMPOSITIONS

Carl Kaplan; Edward Marlowe, both of Memphis, and Robert M. Sayre, Germantown, all of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Filed Sep. 8, 1975, Ser. No. 611,293

Int. Cl.[3] A61K *7/42, 7/44*

U.S. Cl. 424—59 12 Claims

1. A cosmetically elegant, substantive, sun-protective aqueous composition comprising by weight 2 to 10% PABA and 2 to 6% of a cosmetically acceptable C_{12}–C_{18} fatty alcohol which is solid at 20° C. and 0.5 to 2% of a cosmetically acceptable nonionic surfactant of the polyoxyethylene type having an HLB value of between about 9 and 18, the ratio of said alcohol to surfactant being in the range of 2–6 to 1, and about 45 to

65% ethanol with the balance of the vehicle being substantially water.

4,254,103

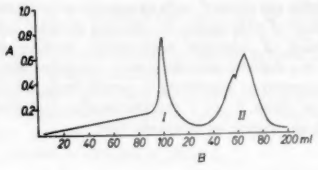
HEPATOPROTECTOR FACTOR (HF) AND METHOD OF TREATMENT

Magdalena Timar, Bucharest, Romania, assignor to Institul de Cercetari Chimicofarmaceutice, Bucharest, Romania

Continuation-in-part of Ser. No. 876,415, Feb. 9, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 46,605

Int. Cl.[3] **A61K** *35/407, 37/00;* **C07G** *17/00*

U.S. Cl. 424—106 **2 Claims**



1. A method of treating liver cirrhosis or viral hepatitis which comprises administering to the patient a pharmaceutically effective amount of the Hepatoprotector Factor (HF) obtained from cattle liver by the following steps:

(a) mincing the cattle liver;

(b) extracting the minced cattle liver with acetone using about 3 kg of 70% acetone solution per kg of liver to form a liver extract in acetone;

(c) pressing the minced cattle liver to separate the liver extract in acetone form the minced cattle liver;

(d) filtering the miced cattle liver in acetone to remove impurities;

(e) evaporating the acetone from the liver extract; then

(f) extracting fat from the liver extract with a hydrophobic organic solvent;

(g) subjecting the liver extract to gel filtration on an SP Sephadex C-25 column and eluting the gel with distilled water to recover a fraction having an absorption peak corresponding to the absorption peak I of FIG. 1 of the drawing where said fraction contains the Hepatoprotector Factor (HF);

(h) lyophilizing the fraction separated out during step (g); and

(i) dissolving the lyophilized product obtained in step (h) in distilled water and chemically ascertaining the quality of the Hepatoprotector Factor (HF) by at least one of the following methods:

(1) elementary analysis;

(2) amino acid analysis; or

(3) high-voltage electrophoresis, and

comparing the results against a known standard.

4,254,104

PROCESS FOR PREPARING STABLE OIL-IN-WATER EMULSIONS

Takashi Suzuki, Yokohama, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1975, Ser. No. 631,250

Claims priority, application Japan, Nov. 12, 1974, 49-130336

Int. Cl.[3] **A61K** *9/10, 7/00*

U.S. Cl. 424—170 **3 Claims**

1. A process for preparing a stable oil-in-water emulsion which comprises:

adding about 0.2 to about 10 weight parts of a hydrophilic nonionic surface active agent selected from the group consisting of (1) a compound of the formula

$$R-X-(CH_2-CH_2-O)_n-H$$

wherein R represents an alkane, alkene, aryl or chloestanol group containing 8 to 30 carbon atoms, X represents an ether or ester group, and n represents an integer of 15 to 120, (2) a compound of the formula

$$R-X-(CH(CH_3)-CH_2-O)_m-(CH_2-CH_2-O)_{m'}-H$$

wherein R and X are the same as defined above, and m and m' represent an integer of 1 to 30 and at least 15, respectively, and (3) an ethylene oxide adduct in which about 30 to about 100 moles of ethylene oxide is added to hydrogenated castor oil, to about 1 to about 90 weight parts of a water-soluble solvent capable of dissolving said surface active agent selected from the group consisting of (1) a lower monohydric alcohol having 1 to 7 carbon atoms, (2) a lower polyhydric alcohol having 3 to 6 carbon atoms, (3) polyethylene glycol having a molecular weight of about 60 to about 2000, and (4) a lower aliphatic amine having 2 or 3 carbon atoms;

adding about 1 to about 90 weight parts of an oil thereto to form an emulsion of the oil in the water-soluble solvent; and

adding about 5 to about 95 weight parts of water to the resulting emulsion.

4,254,105

MULTIPLE EMULSION HAVING A FORM OF WATER/OIL/WATER PHASE AND PROCESS FOR PREPARATION THEREOF, AND MULTIPLE EMULSION TYPE COSMETICS

Hidenori Fukuda, Odawara, Japan, assignor to The Lion Dentifrice Co., Ltd., Tokyo, Japan

Division of Ser. No. 731,253, Oct. 12, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 922,905

Claims priority, application Japan, Oct. 11, 1975, 50/122717; Sep. 6, 1976, 51/106487

Int. Cl.[2] **A61K** *31/00, 31/46, 31/70*

U.S. Cl. 424—170 **5 Claims**

1. Multiple emulsion type cosmetics having a dispersing form of water-phase/oil-phase/water-phase which consists of a dispersed phase and dispersion medium, of which said dispersed phase is a water-in-oil type emulsion formed with water phase in which maltose is dissolved and oil phase which is obtained by dissolving an oil-soluble emulsifier having such a hydrophile-lipophile balance that an oil component forms a dispersion medium of said water-in-oil type emulsion, into said oil component, and of which said dispersion medium is an aqueous solution containing a water-soluble emulsifier having such a hydrophile-lipophile balance that said oil component forms a dispersed phase of an oil-in-water type emulsion, to the extent that said oil-soluble emulsifier is not dissolved therein.

4,254,106

BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 815,774, Jul. 14, 1977, which is a continuation-in-part of Ser. No. 762,529, Jan. 26, 1977, abandoned. This application Sep. 10, 1979, Ser. No. 74,408

Claims priority, application United Kingdom, Jan. 26, 1976, 02900/76; Jan. 26, 1976, 02901/76; Mar. 3, 1976, 08481/76; Mar. 3, 1976, 08402/76; Nov. 23, 1976, 48821/76

Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **28 Claims**

1. A compound of the formula:

H.Tyr.Gly.Gly.Phe.X^7.OR

wherein:

X^7 is selected from the group consisting of Ile, Nle,Pro, Val, Ala, NVa, D-Leu and D-Met;
R is lower alkyl of 1 to 6 carbon atoms;
and the stereochemical configuration of the Tyr and Phe residues may independently be D, L or DL.

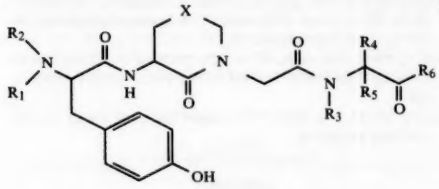
4,254,107

LONG-LASTING AGONISTS OF ENKEPHALIN

Daniel F. Veber, Ambler, and Roger M. Freidinger, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

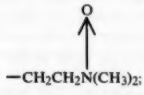
Filed Nov. 27, 1979, Ser. No. 97,758
Int. Cl.[3] **A61K** *37/00;* **C07C** *103/52;* **A10N** *43/84;* **C07D** *209/18, 279/04, 401/00, 211/22*
U.S. Cl. 424—177 **37 Claims**

1. A novel peptide of the formula:



(I.)

where, unless otherwise indicated, an amino acid substituent identified below has the "S—" stereoconfiguration:
X is S or $(CH_2)_n$, where n is 0, 1 or 2;
R_1 is hydrogen; C_{1-6} alkyl; H-Arg; or H-Lys-Arg;
R_2 is hydrogen; C_{1-6} alkyl; or, when R_1 is hydrogen, may be allyl or cyclopropylmethyl;
R_3 is hydrogen or methyl;
R_4 is benzyl; benzyl substituted with halo, nitro, hydroxy, amino, C_{1-4} alkyl, or cyano; indolylmethyl; imidazolylmethyl; or isopropylmethyl;
R_5 is hydrogen or methyl;
R_4 and R_5 taken together are phenylmethylene; and
R_6 is (a) OM, where M is hydrogen, C_{1-6} alkyl, or a cation; (b) NR_7R_8, where R_7 and R_8 are independently selected from the group consisting of hydrogen; C_{1-6} alkyl, and, when either of R_7 or R_8 is hydrogen, $—CH_2CH_2N(CH_3)_2$ and



(c) (Met-OH; (d) Met-NH_2; (e) Met-ol; (f) D-Met-NH_2; (g) N-methyl-Met-NH_2; (h) Met(O)-NH_2; (i) Met(O)-ol; (j) Leu-NH_2; (k) N-methyl-Leu-NH_2; (l) D-Leu-NH_2; or (m) Pro-NH_2.

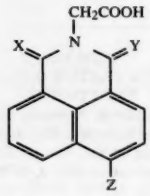
4,254,108

THIOXO-1H-BENZ[DE]ISOQUINOLINE-2(3H)-ACETIC ACID DERIVATIVES AND ANTIDIABETIC USE THEREOF

Kazimir Sestanj, St. Laurent, Canada, assignor to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Nov. 8, 1979, Ser. No. 92,397
Int. Cl.[3] **C07D** *221/14;* **A69K** *31/47;* **A61K** *37/26*
U.S. Cl. 424—178 **8 Claims**

1. A compound of the formula



in which X and Y are independently O or S, with the proviso both are not O or S, and Z is H or thiophenyl, or a therapeutically acceptable salt thereof, with an organic or inorganic base.

7. A method of preventing or relieving diabetic complications consisting of cataracts, neuropathy, nephropathy and retinopathy in a diabetic mammal which comprises administering to said mammal an alleviating or prophylactic amount of a compound of claim **1**, or a therapeutically acceptable salt thereof with an organic or inorganic base.

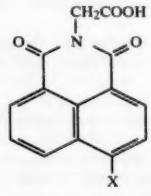
4,254,109

1H-BENZ[DE]ISOQUINOLINE-2(3H)-ACETIC ACID DERIVATIVES

Kazimir Sestanj, St. Laurent, Canada, assignor to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Nov. 8, 1979, Ser. No. 92,604
Int. Cl.[3] **C07D** *221/14;* **A61K** *31/47*
U.S. Cl. 424—178 **9 Claims**

1. A compound of the formula



in which X is selected from the group consisting of benzoyl, phenylthio, (2-carboxyphenyl)thio or decylthio; or a therapeutically acceptable salt thereof with an organic or inorganic base.

6. A pharmaceutical composition, for preventing or relieving diabetic complications consisting of cataracts, neuropathy, nephropathy and retinopathy in a diabetic mammal, which comprises an effective amount of compound of claim **1** or a pharmaceutically acceptable salt thereof with an organic or inorganic base, and a pharmaceutically acceptable carrier.

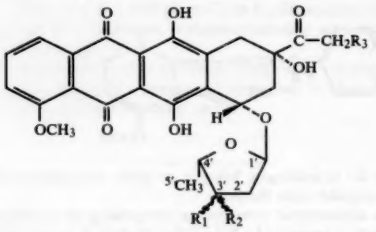
4,254,110

PENTOFURANOSYL ANTHRACYCLINES, INTERMEDIATES IN AND METHOD FOR THEIR PREPARATION AND COMPOSITIONS AND USE THEREOF

Giuseppe Cassinelli, Voghera; Federico Arcamone, Nerviano, and Aurelio di Marco, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Jan. 28, 1980, Ser. No. 115,725
Claims priority, application United Kingdom, Feb. 2, 1979, 03700/79
Int. Cl.[3] **A61K** *31/71;* **C07H** *15/24*
U.S. Cl. 424—180 **9 Claims**

1. An anthracycline glycoside of the formula:



I

wherein one of R_1 and R_2 is hydrogen and the other is formyl, hydroxymethyl or aminomethyl, and R_3 is hydrogen or hydroxy; and the hydrochlorides of said compounds in which one of R_1 and R_2 is aminomethyl.

9. A method of inhibiting the growth of P_{388} leukemia comprising intraperitoneally administering to a mammal afflicted therewith, a therapeutically effective amount of an anthracycline glycoside as claimed in claim **1**.

4,254,111

STEROLIN PRODUCTS

Karl H. Pegel, and Colin B. Rogers, both of Durban, South Africa, assignors to Roecar Holdings (Netherlands Antilles) NV, Amsterdam, Netherlands

Filed Jul. 2, 1979, Ser. No. 53,735

Claims priority, application United Kingdom, Jul. 5, 1978, 28833/78

Int. Cl.[3] **A61K** *31/705;* **C07J** *17/00*

U.S. Cl. 424—182 **18 Claims**

1. A pharmaceutically-acceptable dicarboxylic acid hemiester of a steryl glycoside.

4. An anti-inflammatory composition including a pharmaceutically-acceptable dicarboxylic acid hemiester of a steryl glycoside in a pharmaceutically-effective amount together with an inert carrier.

4,254,112

INULA EXTRACT, ITS METHOD OF PREPARATION AND ITS USE AS PHARMACEUTICAL

Jacques Debat, Saint Cloud; Jean Lemoine, Garches, and Françoise Lier née Gabillault, Plaisir, all of France, assignors to Laboratoire Debat, Paris, France

Filed May 24, 1979, Ser. No. 42,155

Claims priority, application United Kingdom, May 31, 1978, 25615/78

Int. Cl.[3] **A01N** *9/02, 9/08*

U.S. Cl. 424—195 **6 Claims**

2. A method of preparation of an extract of *Inula* useful in therapy as bacteriostatic and fungistatic agent which comprises the extraction of an *Inula* species selected from the group consisting of *Inula viscosa* and *Inula graveolens* with an organical solvent selected from the group consisting of alcohols, ketones, ethers, hydrocarbons, halogenated hydrocarbons and mixtures thereof, 1 l of organical solvent being used for 30 to 150 g of plant.

4,254,113

COMBATING ARTHROPODS WITH O-ALKYL-O-(2-CYCLOPROPYL-6-METHYL-PYRIMIDIN-4-YL)-THIONOPHOSPHONIC ACID ESTERS

Fritz Maurer; Rolf Schröder, both of Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath-Steinenbrueck, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

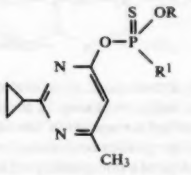
Filed Jun. 22, 1979, Ser. No. 51,282

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1978, 2831165

Int. Cl.[3] **A01N** *57/24;* **C07F** *9/65*

U.S. Cl. 424—200 **9 Claims**

1. An O-alkyl-O-(2-cyclopropyl-6-methyl-pyrimidin-4-yl)-thionophosphonic acid ester of the formula



in which

R is alkyl with 1 to 5 carbon atoms, and

R^1 is alkyl with 1 to 5 carbon atoms or phenyl.

7. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound according to claim **1** in admixture with a diluent.

8. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim **1**.

4,254,114

CONTROL OF PYROPHOSPHATE MICROORGANISMS WITH ORGANOPHOSPHONATES

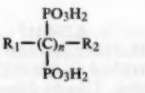
Keith C. Triebwasser, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jan. 2, 1979, Ser. No. 320

Int. Cl.[3] **A01N** *57/00;* **A61K** *31/66*

U.S. Cl. 424—204 **2 Claims**

1. A method for treating amoebiasis comprising administering to a human or lower animal in need of such treatment from about 0.1 to about 5 milligrams/kilogram body weight/day of a geminal diphosphonate compound having the formula



wherein n is an integer from 1 to about 10, R_1 is selected from the group consisting of hydrogen, alkyl containing from 1 to about 20 carbon atoms, alkenyl containing from 2 to about 20 carbon atoms, phenyl, napthyl, phenylethenyl, benzyl, halogen, amino, dimethylamino, diethylamino, N-hydroxy-N-ethylamino, acetylamino, $-CH_2COOH$, $-CH_2PO_3H_2$, $-CH(PO_3H_2)(OH)$ and $-CH_2CH(PO_3H_2)_2$, and R^2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, amino, benzyl, halogen, hydroxyl, $-CH_2COOH$, $-CH_2PO_3H_2$, and $-CH_2CH_2PO_3H_2$, or a pharmaceutically-acceptable salts and mixtures thereof.

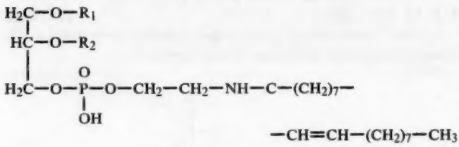
4,254,115

PHOSPHOLIPID DERIVATIVE WITH AN ANTILIPEMIC AND ANTIARTERIOSCLEROTIC EFFECT

Herbert Dawidson, Königsdorf, and Hans Betzing, Horrem, both of Fed. Rep. of Germany, assignors to A. Nattermann & Cie. GmbH, Cologne, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,064
Int. Cl.[3] A61K *31/16;* **C07F** *9/10*
U.S. Cl. 424—211 **2 Claims**

1. N-oleyl derivatives of natural and synthetic phosphatidylethanolamines of the formula:



wherein R_1 and R_2 are saturated, unsaturated, straight-chain or branched aliphatic acids containing 12 to 22 carbon atoms.

2. A pharmaceutical composition having antilipemic and antiarteriosclerotic properties comprising an effective amount of a n-oleyl derivative of a phosphatidylethanolamine having a formula as defined in claim **1**.

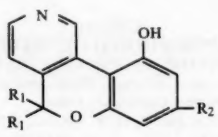
4,254,116

5H-[1]BENZOPYRANO[3,4,-d][1',3']DIOXIDINES

Cheuk M. Lee, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 379,016, Jul. 13, 1973, Pat. No. 3,878,219. This application Apr. 8, 1974, Ser. No. 458,744
Int. Cl.[3] A61K *31/54;* **C07D** *491/052;* **A61K** *31/435, 31/495*
U.S. Cl. 424—246 **23 Claims**

1. A basic compound of the structure



in which R_1 is methyl or ethyl and R_2 is a straight or branched alkyl of from 1–20 carbon atoms or cycloalkyl of 3 to 8 carbons; and its non-toxic pharmaceutically acceptable salts.

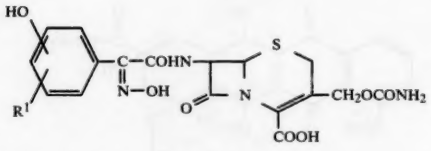
4,254,117

7-(α,α-DISUBSTITUTED-ACETAMIDO)-3-SUBSTITUTED-3-CEPHEM-4-CARBOXYLIC ACIDS

Takao Takaya, Sakai; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 654,804, Feb. 3, 1976, Pat. No. 4,143,166. This application Dec. 20, 1978, Ser. No. 971,220
Claims priority, application Japan, Mar. 27, 1975, 50-37647; Apr. 2, 1975, 50-15191; Apr. 21, 1975, 50-48833; Jun. 23, 1975, 50-78294; Jul. 7, 1975, 50-83867
Int. Cl.[3] A61K *31/545;* **C07D** *501/44*
U.S. Cl. 424—246 **9 Claims**

1. 7-(α,α-Disubstituted-acetamido)-3-substituted-3-cephem-4-carboxylic acid (syn isomer) of the formula:



wherein R^1 is hydrogen, halogen or nitro, and pharmaceutically acceptable salts thereof.

9. An antibacterial composition comprising an antibacterially effective amount of a compound of claim **1** in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

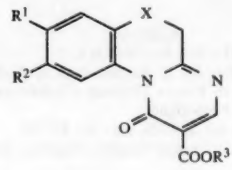
4,254,118

1-OXO-5H-PYRIMIDO[2,1-C][1,4]BENZTHIAZINE-2-CARBOXYLIC ACID ESTERS

Jean A. Gauthier, and Ivo L. Jirkovsky, both of Montreal, Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Aug. 13, 1979, Ser. No. 65,790
Int. Cl.[3] C07D *513/14;* **A61K** *31/54*
U.S. Cl. 424—246 **6 Claims**

1. A compound of formula I



(I)

in which R^1 is hydrogen, lower alkyl, halo, lower alkoxycarbonyl, carboxy, nitro or trifluoromethyl; R^2 is hydrogen, lower alkyl, halo, nitro or trifluoromethyl; R^3 is lower alkyl; and X is sulfur; or a therapeutically acceptable basic addition salt of the compound of formula I in which R^1 is carboxy and R^2, R^3 and X are as defined herein.

5. A method of preventing or treating anaphylactic reactions or allergic conditions in a mammal, which comprises administering to said mammal an effective anaphylactic alleviating or allergic alleviating amount of a compound according to claim **1**.

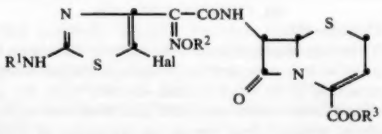
4,254,119

3-UNSUBSTITUTED-3-CEPHEM COMPOUNDS

Yoshio Hamashima, Kyoto, and Wataru Nagata, Nishinomiya, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sep. 11, 1979, Ser. No. 74,811
Claims priority, application Japan, Sep. 20, 1978, 53/115498
Int. Cl.[3] A61K *31/545;* **C07D** *501/20*
U.S. Cl. 424—246 **44 Claims**

1. A compound of the formula



wherein Hal is halogen;

R^1 is hydrogen, C_1 to C_5 alkanoyl which is optionally halogenated, or C_8 to C_{12} aralkoxycarbonyl;

R^2 is C_1 to C_6 alkyl; and

R^3 is hydrogen, alkali metal, magnesium, calcium, aluminum, C_7 to C_{11} aralkyl, or C_2 to C_6 alkanoyloxyalkyl

or, when R^1 is hydrogen, a pharmaceutically acceptable acid addition salt thereof.

22. An antibacterial composition comprising a bactericidally effective amount of a compound according to claim **1** and a pharmaceutically acceptable carrier.

4,254,120

GROWTH PROMOTING QUINOXALINE-DI-N-OXIDE CARBOXAMIDES

Wolfgang Schmid, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

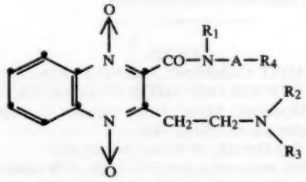
Filed Dec. 10, 1979, Ser. No. 102,281

Claims priority, application Switzerland, Dec. 19, 1978, 12887/78; Jul. 5, 1979, 6295/79; Nov. 20, 1979, 10341/79

Int. Cl.[3] **A61K** *31/495, 31/535;* **C07D** *241/52, 413/06*

U.S. Cl. 424—248.52 **10 Claims**

1. A quinoxaline-di-N-oxide derivative of the general formula I



(I)

in which

R_1 is hydrogen or straight-chain or branched-chain alkyl having 1 to 4 carbon atoms,

R_2 and R_3 independently of one another are each straight-chain or branched-chain alkyl having 1 to 4 carbon atoms, or together with the N atom they form a heterocyclic ring which is unsubstituted or is substituted by alkyl having 1 to 4 carbon atoms, and which has 4 to 5 ring carbon atoms and optionally an oxygen atom as further hetero atom,

R_4 is hydrogen, methoxy, methylthio, hydroxyl, fluorine, chlorine, bromine or cyano, and

A is alkylene having 1 to 4 carbon atoms, with the proviso that if R_4 has a meaning other than cyano, A is 1,2-ethylene, and R_1 is hydrogen,

including the acid addition salts thereof.

9. A composition for combating harmful microorganisms or for promoting the growth of domestic animals, which contains as active substance an effective amount of at least one compound of the formula I, or one of its addition salts, according to claim **1**, together with inert carriers and/or distributing agents.

4,254,121

3-OXO-5H-PYRIMIDO[2,1-c][1,4]BENZOXAZINES

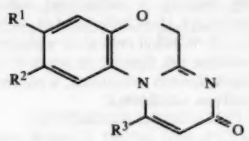
Jean A. Gauthier, and Ivo L. Jirkovsky, both of Montreal, Canada, assignors to Ayerst, McKenna & Harrison Inc., Montreal, Canada

Filed Aug. 13, 1979, Ser. No. 65,789

Int. Cl.[3] **A61K** *31/535;* **C07D** *498/14*

U.S. Cl. 424—248.55 **12 Claims**

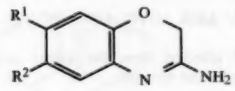
1. A compound of formula I



(I)

in which R^1 and R^2 are the same or different selected from the group of hydrogen, lower alkyl and halo; and R^3 is hydrogen, hydroxymethyl, or lower alkoxycarbonyl.

10. A process for preparing the compound of claim **1** which comprises reacting a compound of formula II



(II)

in which R^1 and R^2 are in the same or different selected from the group of hydrogen, lower alkyl and halo with a compound of formula $R^3C{\equiv}C{-}COO{-}$(lower alkyl)in which R^3 is hydrogen, hydroxymethyl or lower alkoxycarbonyl.

11. A method of preventing or treating anaphylactic reactions or allergic conditions in a mammal, which comprises administering to said mammal an effective anaphylactic alleviating or allergic alleviating amount of a compound according to claim **1**.

12. A pharmaceutical composition for preventing or treating anaphylactic or allergic conditions, which comprises an anti-anaphylactic or anti-allergic effective amount of a compound according to claim **1**, and a pharmaceutically acceptable carrier.

4,254,122

TRIAZINE DERIVATIVES

Edward D. Brown, Knutsford, England, assignor to Imperial Chemical Industries Limited, London, England

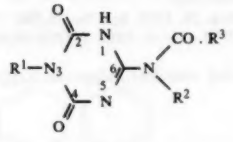
Filed May 7, 1979, Ser. No. 36,508

Claims priority, application United Kingdom, May 26, 1978, 22938/78

Int. Cl.[3] **C07D** *251/46;* **A61K** *31/53;* **C07D** *401/04, 401/06*

U.S. Cl. 424—249 **14 Claims**

1. A 6-acylamino-tetrahydro-1,3,5-triazine-2,4-dione of the formula:



I

wherein R^1 is a phenyl or phenyl-(1–4C)alkyl radical optionally bearing one or two substituents selected from halogeno, trifluoromethyl, (1–4C)alkyl, (1–4C)alkoxy, methylenedioxy, (2–5C)alkanoyloxy, nitro, acetyl, cyano, phenyl, halogenophenyl, carboxy, [(1–4C)alkoxy]carbonyl, (3–6C)alkenloxy, (2–8C)dialkylamino, and (1–4C)alkylthio substituents, a phenyl radical bearing three, four or five fluoro substituents, or a naphthyl, furyl, thienyl, pyridyl, quinolinyl, benzthienyl or (furyl-, thienyl-, pyridyl-, quinolinyl- or benzthienyl)-(1–4C)alkyl radical optionally bearing a substituent selected from halogeno, (1–4C)alkyl and (1–4C)alkoxy substituents; and wherein R^2 is a (3–8C)alkyl radical or a (1–4C)alkyl radical bearing one or two (1–4C)alkoxy substituents or bearing a 1,3-dioxalanyl, tetrahydrofuryl or tetrahydropyranyl substituent, or is a (3–8C)cycloalkyl, [(3–8C)cycloalkyl]-(1–4C)alkyl,

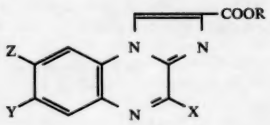
(3–6C)alkenyl radical, or is a phenyl-(1–4C)alkyl or phenyl radical optionally bearing a substituent selected from halogeno, trifluoromethyl, (1–4C)alkyl and (1–4C)alkoxy substituents; and R^3 is a (1–4C)alkyl radical; or a pharmaceutically acceptable base-addition salt thereof; or when R^1 is a radical bearing a (2–8C)dialkylamino substituent, a pharmaceutically acceptable acid-addition salt thereof.

4,254,123
NOVEL IMIDAZOQUINOXALINES

Peter J. Ramm, Newcastle-upon-Tyne, and Alan C. Barnes, Cirencester Glos, both of England, assignors to Roussel Uclaf, Paris, France

Filed Jul. 30, 1979, Ser. No. 61,626
Claims priority, application United Kingdom, Aug. 2, 1978, 31934/78
Int. Cl.³ A61K *31/495*; C07D *487/14*
U.S. Cl. 424—250 **39 Claims**

1. A compound selected from the group consisting of imidazoquinoxalines of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, —NH_4, alkali metal, alkaline earth metal, magnesium, aluminum and non-toxic, pharmaceutically acceptable amines, X is selected from the group consisting of hydrogen, alkoxy of 1 to 5 carbon atoms and carbamoyl and Y and Z are individually selected from the group consisting of hydrogen and halogen and their non-toxic, pharmaceutically acceptable acid addition salts.

14. An antiallergic composition comprising an antiallergically effective amount of at least one compound of claim **1** and an excipient.

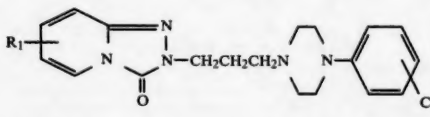
27. A method of relieving allergic symptoms in warm-blooded animals comprising administering to warm-blooded animals an antiallergically effective amount of at least one compound of claim **1**.

4,254,124
ANTIDEPRESSANT AGENT

Duane F. Morrow, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed Sep. 24, 1979, Ser. No. 78,536
Int. Cl.³ C07D *401/14*; A61K *31/495*, *31/41*
U.S. Cl. 424—250 **6 Claims**

1. The 2-substituted triazolo[4,3-a]pyridin-3(2H)-ones having the formula



and the pharmaceutically acceptable acid addition salts thereof wherein

R^1 is hydrogen or lower alkyl located in the 5, 6, 7, or 8 position of the 1,2,4-triazolo[4,3-a]pyridin-3(2H)-one ring and having 1 to 4 carbon atoms, and

CF_3 is located in the 2, 3, or 4 position of the phenyl ring.

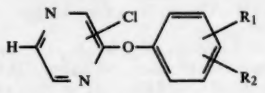
6. The process for exerting an antidepressant effect which comprises administering orally or parenterally to a patient suffering from either neurotic or endogenous depression a non-toxic antidepressively effective dose of a compound claimed in claim **1**.

4,254,125
2-CHLORO-3-PHENOXYPYRAZINES AND 2-CHLORO-6-PHENOXYPYRAZINES POSSESSING ANTIVIRAL ACTIVITY

Shyam Sunder; John K. Daniel, and Norton P. Peet, all of Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 7, 1980, Ser. No. 137,662
Int. Cl.³ A61K *31/495*; C07D *241/16*
U.S. Cl. 424—250 **33 Claims**

1. A compound of the formula:



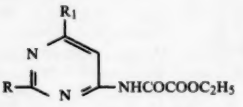
wherein R_1 and R_2 each independently represent hydrogen, lower alkyl, lower alkoxy, nitro, amino, cyano, trifluoromethyl, acetyl, methylthio, methylsulfinyl, methylsulfonyl, aminosulfonyl, phenoxy or halogen; or alternatively R_1 and R_2 taken together represent methylenedioxy.

4,254,126
4-CARBETHOXY-CARBONILAMINO-PYRIMIDINES AND A PROCESS FOR THEIR PREPARATION

Giangiacomo Massaroli, Milan, Italy, assignor to POLI Industria Chimica S.p.A., Milan, Italy

Filed Oct. 22, 1979, Ser. No. 87,066
Claims priority, application Italy, Dec. 18, 1978, 30943 A/78
Int. Cl.³ A61K *31/505*; C07D *239/34*
U.S. Cl. 424—251 **19 Claims**

1. Carbethoxy-carbonilamino-pyrimidines having the general formula (I)



(I)

in which

R = H, CH_3, C_6H_5, SCH_3

R_1 = H, Cl, OCH_3, $OCH_2CH_2OCH_3$, $SCH_2CH_2CH_2COOC_2H_5$, SCH_3, SCH_2CH_2OH, $SCH_2CH_2OCOCOOC_2H_5$, $OCH_2CH_2OCH_2C_6H_5$, $SCH_2CH_2OCH_3$, $SCH_2CH_2OCH_2CH_2OCH_3$.

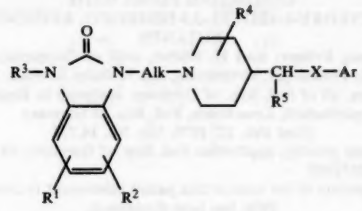
19. A pharmaceutical composition having an action against allergy and against gastric secretions, characterised by the fact that it contains in the form of active principle one or more compounds in accordance with claim **1**.

4,254,127
1,3-DIHYDRO-1-[(1-PIPERIDINYL)ALKYL]-2H-BENZIMIDAZOL-2-ONE DERIVATIVES

Jan Vandenberk, Beerse; Ludo E. J. Kennis, Turnhout; Albert H. M. Th. Van Heertum, and Marcel J. M. C. Van der Aa, both of Vosselaar, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Filed Apr. 3, 1980, Ser. No. 137,067
Int. Cl.³ C07D *401/06*; A61K *31/445*; C07D *401/14*, *409/14*
U.S. Cl. 424—263 **11 Claims**

1. A chemical compound selected from the group consisting of a 1,3-dihydro-1-[(1-piperidinyl)alkyl]-2H-benzimidazol-2-one derivative having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein:

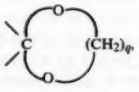
R^1 and R^2 are each independently selected from the group consisting of hydrogen, halo, lower alkyl and trifluoromethyl;

R^3 is a member selected from the group consisting of hydrogen, lower alkyl and lower alkylcarbonyl;

Alk is a lower alkylene radical;

R^4 and R^5 are each independently selected from the group consisting of hydrogen and lower alkyl;

X is a member selected from the group consisting of >C=O, >CH—OH, >CH—O—C(O)—R_a, >CH_a, >C(O-lower alkyl)$_2$



>C=NOH and >C=N—NH_2, wherein said R_a is hydrogen or lower alkyl and said q is the integer 2 or 3; and

Ar is a member selected from the group consisting of phenyl, substituted phenyl, pyridinyl and thienyl, wherein said substituted phenyl has from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkoxy, amino, nitro and trifluoromethyl.

11. A method of treating mental disorders in a warm-blooded animal affected by such disorders which comprises the systemic administration of an effective phychotropic inhibiting amount of the compound of claim **1** in admixture with a pharmaceutically-acceptable carrier.

4,254,128

2-ADAMANTYL HYDRAZINES AND BIOCIDAL COMPOSITIONS THEREOF

Ben-Zion Weiner; Raul Suchi; Jeffrey Sterling, all of Jerusalem, and Haim Yellin, Ramat Gan, all of Israel, assignors to Teva Pharmaceutical Industries Ltd., Jerusalem, Israel

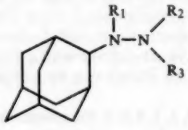
Filed Nov. 22, 1978, Ser. No. 963,113

Claims priority, application Israel, Nov. 22, 1977, 53440

Int. Cl.[3] **A61K** *31/445, 31/40;* **C07D** *295/22*

U.S. Cl. 424—267 **7 Claims**

1. 2-Adamantyl hydrazine derivative of the formula



in which R_1 is hydrogen or a lower alkyl group of 1–4 carbon atoms; R_2 and R_3 together with the nitrogen atom to which they are attached form piperidino, homopiperidino, pyrrolidino or heptamethyleneimine; or a pharmaceutically acceptable acid addition salt thereof.

7. An antifungal, antiviral, antiprotozoal or antimicrobial composition containing as active ingredient an antifungally, antivirally, antiprotozoally or antimicrobially effective compound according to claim **1** and a pharmaceutical carrier therefor.

4,254,129

PIPERIDINE DERIVATIVES

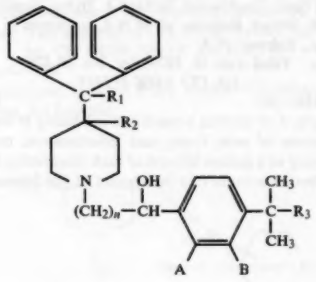
Albert A. Carr; Joseph E. Dolfini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 10, 1979, Ser. No. 28,813

Int. Cl.[3] **C07D** *211/34;* **A61K** *31/445*

U.S. Cl. 424—267 **11 Claims**

1. A compound of the formula



wherein R_1 represents hydrogen or hydroxy; R_2 represents hydrogen; or R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2; n is an integer of from 1 to 5; R_3 is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched; each of A and B is hydrogen or hydroxy; with the proviso that at least one of A or B is hydrogen; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,254,130

PIPERIDINE DERIVATIVES

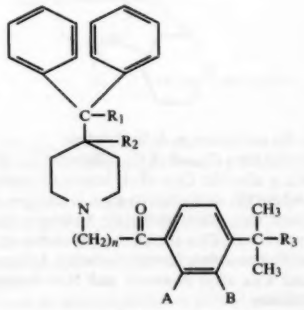
Albert A. Carr; Joseph E. Dolfini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 10, 1979, Ser. No. 28,872

Int. Cl.[3] **C07D** *211/34;* **A61K** *31/445*

U.S. Cl. 424—267 **15 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or hydroxy; R_2 is hydrogen; or R_1 and R_2 taken together form a second bond between the carbon

atoms bearing R_1 and R_2; n is an integer of from 1 to 5; $R_3$is —COOH or —COOalkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and is straight or branched; and A and B are individually hydrogen or hydroxy; with the proviso that at least one of A or B is hydrogen; and pharmaceutically acceptable acid addition salts thereof.

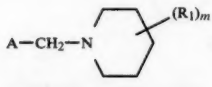
4,254,131

TREATMENT OF PAIN, FEVER, AND INFLAMMATION WITH COMPOSITIONS CONTAINING 2-(SUBSTITUTEDPIPERIDINOMETHYL)PROPANE AND PROPENE NITRILES

Nathaniel Grier, Englewood; Richard A. Dybas, Somerville, and Bruce E. Witzel, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

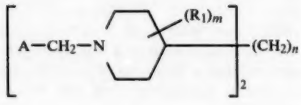
Filed Aug. 21, 1979, Ser. No. 68,376
Int. Cl.³ A61K *31/445*
U.S. Cl. 424—267 **18 Claims**

1. A method of treating a condition exhibiting at least one of the symptoms of pain, fever, and inflammation, comprising administering to a patient in need of such treatment a therapeutically effective amount of a compound of the formula:



or

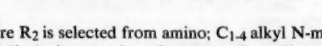
(I.)



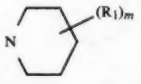
(II.)

wherein

A is



where R_2 is selected from amino; C_{1-4} alkyl N-mono- and N,N-disubstitutedamino; hydroxy; C_{1-8} alkoxy; piperidino; and substituted piperidino of the formula:



where R_1 and m are as defined below;

R_1 is selected from C_{1-8} alkyl; C_{2-8} alkenyl; C_{3-12} aliheterocyclic; C_{3-12} alicyclic C_{1-3} alkyl; hetero C_{5-6} alicyclic C_{1-3} alkyl where the single hetero atom is nitrogen or oxygen; aryl; aryl C_{1-3} alkyl; carboxyl; hydrogen sulfito; C_{1-4} alkoxycarbonyl; C_{1-4} alkylcarbonyl; carbamyl; halo; cyano; trifluoromethyl; formyl; hydroxy; hydroxy C_{1-3} alkyl; and C_{1-4} alkyl N-mono- and N,N-disubstitutedcarbonylamino;

m is 0 to 4; and

n is 0 to 3;

and acid addition and quaternary salts thereof.

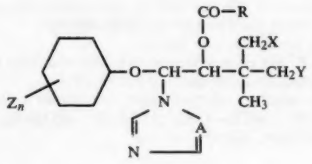
4,254,132

COMBATING FUNGI WITH 2-ACYLOXY-1-AZOLYL-3,3-DIMETHYL-2-PHENOXY-BUTANES

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Paul-Ernst Frohberger, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1979, Ser. No. 14,771
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811919
The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.
Int. Cl.³ A01N *43/50, 43/64;* C07D *233/60, 249/08*
U.S. Cl. 424—269 **11 Claims**

1. A 2-acyloxy-1-azolyl-3,3-dimethyl-2-phenoxy-butane of the formula



in which

A represents a nitrogen atom or the CH group,

R represents alkyl with 1 to 8 carbon atoms; alkenyl or alkynyl with 2 to 4 carbon atoms; halogenomethyl or halogenoethyl with 1 to 5 halogen atoms; alkoxyalkyl with 1 to 4 carbon atoms in each alkyl moiety; cycloalkyl with 5 to 7 carbon atoms; phenyl, benzyl, phenethyl, phenoxymethyl or phenoxyethyl optionally carrying at least one substituent on the phenyl nucleus selected from halogen, cyano, nitro, methyl and ethyl; alkylamino with 1 to 12 carbon atoms; dialkylamino with 1 to 4 carbon atoms in each alkyl moiety; halogenoalkylamino with up to 4 carbon atoms and up to 5 halogen atoms; alkoxycarbonylamino with 1 to 4 carbon atoms in the alkyl moiety, alkoxyalkylamino with 1 to 4 carbon atoms in each alkyl moiety; or phenylamino which optionally carries at least one substituent selected from halogen, nitro, cyano, alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 or 2 carbon atoms, halogenomethyl or halogenoethyl with up to 5 halogen atoms, and alkoxycarbonylalkenyl with 1 to 4 carbon atoms in the alkyl moiety and 2 to 4 carbon atoms in the alkenyl moiety;

X represents hydrogen, halogen or alkylcarbonyloxy with 1 to 4 carbon atoms in the alkyl moiety;

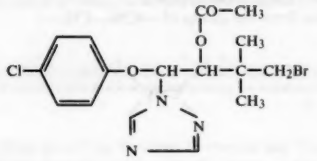
Y represents halogen;

Z represents halogen; cyano; nitro; alkyl with 1 to 4 carbon atoms; cycloalkyl with 5 to 7 carbon atoms; halogenomethyl or halogenoethyl with up to 5 halogen atoms; alkoxycarbonyl with a total of up to 5 carbon atoms; methoxy; ethoxy; methylthio; ethylthio; phenyl or phenoxy optionally carrying at least one substituent selected from halogen, amino, cyano, nitro, methyl and ethyl, or benzyl or phenethyl optionally substituted in the alkyl moiety by alkylcarbonyloxy with a total of up to 3 carbon atoms and in the phenyl ring by halogen, nitro or cyano; and

n represents 0, 1, 2, 3, 4 or 5, the substituents Z being selected independently of one another when n is 2 or more,

or a physiologically acceptable acid addition salt or metal salt complex thereof.

8. A compound, or a salt or complex thereof, according to claim **1**, wherein such compound is 1-(4-chlorophenoxy)-1-(1,2,4-triazol-1-yl)-2-acetoxy-3,3-dimethyl-4-bromo-butane of the formula

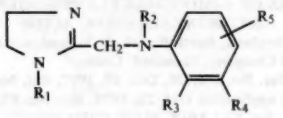


4,254,133
COMBATTING ECTOPARASITES WITH PHENYLAMINOALKYL-2-IMIDAZOLINE COMPOUNDS

Haukur Kristinsson, Bottmingen, and Walter Traber, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 850,444, Nov. 10, 1977, abandoned. This application May 29, 1979, Ser. No. 42,822
Claims priority, application Switzerland, Nov. 16, 1976, 14401/76; Nov. 16, 1976, 14402/76; Oct. 11, 1977, 12390/77
Int. Cl.[3] A01N *43/50*
U.S. Cl. 424—273 R **4 Claims**

1. A method for controlling pests selected from the group consisting of mites and ticks which comprises applying thereto a pesticidally effective amount of a compound of the formula



wherein

each of R_1 and R_2 represents hydrogen or alkyl of from 1 to 10 carbon atoms,

each of R_3 and R_4 represents alkyl of from 1 to 5 carbon atoms or halogen, and

R_5 represents hydrogen, alkyl of from 1 to 5 carbon atoms or halogen,

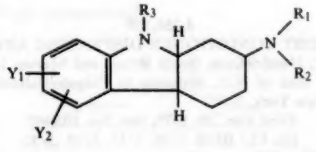
or an acid addition salt thereof.

4,254,134
ANTIDEPRESSANT 2-AMINO- AND -2-(SUBSTITUTED AMINO)-CIS-HEXAHYDRO-CARBAZOLES

Leonard J. Fliedner, Jr., Point Lookout, N.Y., assignor to Endo Laboratories, Inc., Garden City, N.Y.

Filed Mar. 17, 1978, Ser. No. 887,799
Int. Cl.[3] C07D *209/88;* A61K *31/40*
U.S. Cl. 424—274 **18 Claims**

1. A compound of the formula



wherein

R_1 is

where R is methoxy or ethoxy;

R_2 is hydrogen or methyl;

R_3 is hydrogen, methyl or ethyl;

Y_1 is hydrogen, fluorine, chlorine, bromine, hydroxy, methyl, benzyloxy, or C_1-C_6 alkoxy;

Y_2 is hydrogen or chlorine; with the proviso that Y_2 is chlorine only when Y_1 is chlorine;

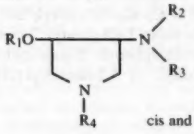
or a pharmaceutically suitable salt thereof.

4,254,135
3-AMINO-4-HYDROXYPYRROLIDINES

David A. Walsh, and Dwight A. Shamblee, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 25,416, Mar. 30, 1979, abandoned. This application Oct. 16, 1979, Ser. No. 85,361
Int. Cl.[3] C07D *207/14;* A61K *31/40*
U.S. Cl. 424—274 **93 Claims**

1. A compound selected from 3-amino-4-hydroxy-pyrrolidines having the formula:



cis and trans isomers

wherein;

R_1 is hydrogen, loweralkyl or phenylcarbonyl,

R_2 is hydrogen, loweralkyl, lowercycloalkyl, phenyl, or phenylloweralkyl,

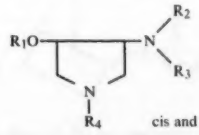
R_3 is hydrogen, loweralkyl, phenylloweralkyl, phenylcarbonyl, diphenylmethyl, -5-yl-10,11-dihydro-5H dibenzo[a,d-]cycloheptene, or naphthyl-carbonyl,

R_4 is hydrogen, loweralkyl, phenylloweralkyl or lowercycloalkyl,

Phenyl is unsubstituted phenyl or phenyl substituted by 1 to 3 groups selected from halogen, alkyl, loweralkoxy, trifluoromethyl, benzyloxy, nitro, amino, acetamido, and hydroxy,

and the pharmaceutically acceptable acid addition salts thereof.

80. A method of treating depression in animals which comprises administering to said animal an effective amount of a compound having the formula:



cis and trans isomers

wherein;

R_1 is hydrogen, loweralkyl or phenylcarbonyl,

R_2 is hydrogen, loweralkyl, lowercycloalkyl, phenyl or phenylloweralkyl,

R_3 is hydrogen, loweralkyl, phenylloweralkyl, phenylcarbonyl, diphenylmethyl, -5-yl-10,11-dihydro-5H-dibenzo[a,d-]cycloheptane, or naphthyl-carbonyl,

R_4 is hydrogen, loweralkyl, phenylloweralkyl or lowercycloalkyl,

Phenyl is unsubstituted phenyl or phenyl substituted by 1 to 3 groups selected from halogen, alkyl, loweralkoxy, trifluoromethyl, benzyloxy, nitro, amino, acetamido, and hydroxy,

or the pharmaceutically acceptable acid addition salts thereof.

4,254,136

PHENOLIC ESTERS OF N-TRIALKYLUREIDOTHIO-N-METHYL CARBAMIC ACIDS USEFUL AS INSECTICIDES

Jozef Drabek, Oberwil, Switzerland, and Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

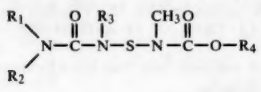
Filed Aug. 20, 1979, Ser. No. 68,261

Claims priority, application Switzerland, Aug. 31, 1978, 9197/78; Mar. 12, 1979, 2328/79; Jun. 7, 1979, 5309/79

Int. Cl.[3] A01N *43/08;* C07D *307/86*

U.S. Cl. 424—282 **12 Claims**

1. A compound of the formula I



(I)

wherein R_1 and R_2 each independently of the other is C_1–C_4-alkyl, R_3 is C_1–C_{10}-alkyl or C_3–C_6-cycloalkyl, and R_4 is 2-isopropoxyphenyl; 2-(1,3-dioxolan-2-yl)-phenyl; 2-methylthiomethylphenyl; 2-ethylthiomethylphenyl; 2-isopropylphenyl; 3,5-dimethyl-4-methylthiophenyl; or 2,2-dimethyl-(2H,3H)-dihydrobenzofuran-7-yl.

4,254,137

BICYCLIC PROSTAGLANDINS AND PROCESS FOR THEIR PREPARATION

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, Milan; Roberto Ceserani, Milan, and Maria M. Usardi, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

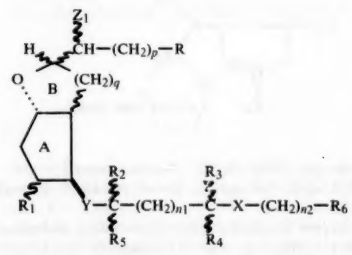
Division of Ser. No. 965,267, Dec. 1, 1978, which is a division of Ser. No. 859,703, Dec. 12, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,118

Claims priority, application Italy, Dec. 31, 1976, 31041 A/76; Jan. 14, 1977, 19283 A/77; Mar. 14, 1977, 21171 A/77; Mar. 21, 1977, 21412 A/77; Mar. 31, 1977, 21863 A/77

Int. Cl.[3] A61K *31/35;* C07D *311/02*

U.S. Cl. 424—283 **13 Claims**

1. A compound of the formula (I)



(I)

where q is 2

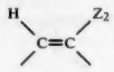
R is a free carboxy group or an esterified carboxy group of the formula —$COOR_c$ wherein R_c is C_1-C_{12} alkyl or C_2-C_{12} alkenyl;

Z_1 is hydrogen;

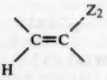
p is zero or an integer of 1 to 7;

R_1 is hydrogen, hydroxy, C_1-C_6 alkoxy, benzyloxy, C_2-C_{12} alkanoyloxy, or benzoyloxy;

Y is chosen from the group of —CH_2—CH_2—,



(cis) and



(trans)

wherein Z_2 is hydrogen or halogen; or —C≡C—; one of R_2 and R_5 is hydrogen, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, phenyl, α-naphthyl or β-naphthyl and the other is hydroxy, C_1-C_6 alkoxy, benzyloxy or R_2 and R_5, taken together form an oxo group; each of R_3 and R_4, which are the same or different, may be hydrogen, C_1-C_6 alkyl or fluorine; each of n_1 and n_2, which are the same or different, is zero or an integer of 1 to 6; X is —O— or —S—; R_6 is hydrogen or C_1-C_4 alkyl, and the pharmaceutically and veterinarily acceptable salts thereof.

4,254,138

ESTERS OF 4-(MONOALKYLAMINO)BENZOIC HYDROXYALKANOIC ACIDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 861,736, Dec. 19, 1977, Pat. No. 4,196,208. This application Oct. 22, 1979, Ser. No. 87,137

Int. Cl.[3] A61K *31/35;* C07D *309/12*

U.S. Cl. 424—283 **5 Claims**

1. A compound of the formula:

wherein R_1 is an unbranched or branched alkyl group of the formula C_nH_{2n+1} where n is an integer from 8 to 19, inclusive; R_2 is selected from the group consisting of hydrogen, methyl, carboxyalkyl, acetyl, succinyl, 1-(sodiumsulfo)loweralkyl, 1-(sodiumsulfo)polyhydroxyalkyl, and 1,3-bis(sodiumsulfo)aralkyl; and R_3 is tetrahydropyranyl; and the pharmaceutically acceptable acid-addition and cationic salts thereof.

5. The method of treating hyperlipidemia and hyperlipoproteinemia and/or altering the lipoprotein pattern in a mammal comprising administering to said mammal an effective lipid-altering amount of a compound in accordance with claim **1**.

4,254,139

LAUNDRY CONDITIONER DISPENSING ARTICLE

Thomas C. Hendrickson, South River, and Marvin Liebowitz, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,807

Int. Cl.[3] B32B *3/06, 5/16, 5/18, 5/30*

U.S. Cl. 428—283 **10 Claims**

1. Unitary conditioner article for dispensing conditioning agent in an automatic laundry dryer drum or similar apparatus for containing fabric to be treated comprising a first layer consisting of a magnetized, rubber polymeric material adapted to forcibly, magnetically engage an internal metallic surface portion of said apparatus in form-retaining relationship therewith, and a second layer integral with and overlying said first

layer comprising a liquid permeable, sorptive sheet material for containing and dispensing said conditioning agent.

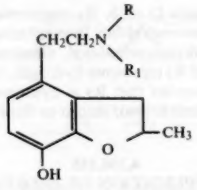
8. An article according to claim 1 wherein said first layer is selected from material and synthetic sponges, foam sheet, paper, cloth, and porous film forming organic polymeric materials, of the form retaining or flexible type.

4,254,140
4-(2-AMINOETHYL)-7-HYDROXY-2-METHYL-2,3-DIHYDROBENZOFURANS

Charles K. Brush, Malvern, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Mar. 20, 1980, Ser. No. 132,041
Int. Cl.[3] A61K *31/34;* C07D *307/86*
U.S. Cl. 424—285 8 Claims

1. A compound of the structural formula:



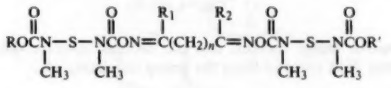
in which R and R_1 are hydrogen or lower alkyl of 1–6 carbons; together with pharmaceutically acceptable acid addition salts thereof.

4,254,141
INSECTICIDAL CARBAMOYL SULFIDES

Jiin-Duey Cheng, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

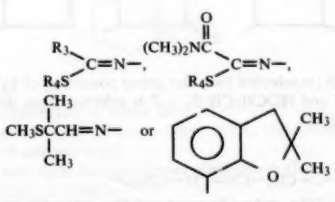
Continuation-in-part of Ser. No. 18,293, Mar. 6, 1979. This application Apr. 24, 1980, Ser. No. 139,836
Int. Cl.[3] A01N *41/12;* C07D *339/08;* C07C *119/18, 145/02*
U.S. Cl. 424—298 45 Claims

1. A compound of the formula

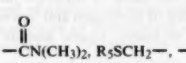


wherein

R and R′ are independently



R_1 is hydrogen, C_1–C_4 alkyl, C_5–C_6 cycloalkyl, C_1–C_3 alkylthio, chlorine, chloromethyl,



phenyl or phenyl substituted with C_1–C_4 alkyl;

R_2 is hydrogen, C_1–C_4 alkyl, C_5–C_6 cycloalkyl, chlorine, C_1–C_3 alkylthio, phenyl or phenyl substituted with C_1–C_4 alkyl;

R_1 and R_2 can be taken together to form a carbocyclic bridge of three to five carbon atoms, or a bridge of the formula $—SCH_2CH_2S—$;

R_3 is C_1–C_3 alkyl;

R_4 is C_1–C_3 alkyl;

R_5 is C_1–C_3 alkyl;

R_6 is C_1–C_6 alkyl; and

n is 0, 1 or 2;

provided that n is 0 when

(1) R_1 is chloromethyl or R_4SCH_2, or

(2) R_1 and R_2 are taken together to form a carbocyclic bridge or a bridge of the formula $—SCH_2CH_2S—$, or

(3) at least one of R_1 and R_2 is alkylthio;

and provided that when n is 0,

one of R_1 and R_2 cannot be H when the other is phenyl or phenyl substituted with C_1–C_4 alkyl;

and further provided that when n is 1,

R_1 and R_2 cannot both be t-butyl, phenyl, phenyl substituted with C_1–C_4 alkyl or combination thereof.

16. An agricultural composition consisting essentially of a diluent, surfactant or mixture thereof and an insecticidally, acaricidally, or nematicidally effective amount of a compound of claim 1.

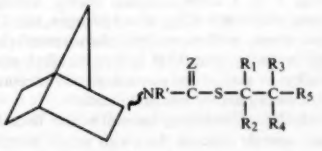
31. A method for control of insects, acari, or nematodes which comprises applying to a locus to be protected an insecticidally, acaricidally, or nematicidally effective amount of a compound of claim 1.

4,254,142
DITHIOCARBANILIC ACIDS AND USE THEREOF AS IMMUNOSUPPRESSIVE AGENT

David J. Anderson, Kalamazoo, and Barbara E. Loughman, Richland, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 8, 1979, Ser. No. 64,784
Int. Cl.[3] A61K *31/27;* C07C *155/08*
U.S. Cl. 424—300 18 Claims

1. A compound having the formula



wherein R_1 through R_4 are the same or different and are selected from the group consisting of hydrogen and alkyl of from 1 to 3 carbon atoms, inclusive; R′ is selected from the group consisting of hydrogen and alkyl of from 1 to 8 carbon atoms, inclusive; Z is selected from the group consisting of oxygen and sulfur; R_5 is $—(CH_2)_nA$ wherein A is selected from the group consisting of carboxyl, carboxylic lower alkylester, carboxylic amide group having the formula

wherein R_6 and R_7 are the same or different and are selected from the group consisting of hydrogen and lower alkyl of from 1 to 8 carbon atoms, inclusive; cyano and an amine group having the formula

wherein R'' and R''' are the same are different and are selected from the group consisting of hydrogen and alkyl of from 1 to 8 carbon atoms, inclusive; with the proviso that when R_5 is a cyano or a carboxylic amide group; R_3 or R_4 must always be hydrogen; and pharmaceutically acceptable salts of compounds wherein R_5 is an amine or carboxyl group.

4,254,143

MONOCARBOXYLATES OF PHENYLGUANIDINESULFONIC ACID ESTERS, A PROCESS FOR THEIR MANUFACTURE, COMPOSITIONS CONTAINING THEM AND THEIR USE FOR COMBATING HELMINTHS

Heinz Loewe, Kelkheim; Josef Urbanietz, Schwalbach; Dieter Düwel, Hofheim am Taunus, and Reinhard Kirsch, Eppstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

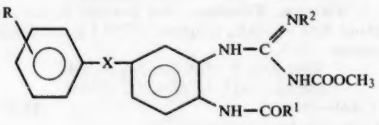
Filed Aug. 16, 1979, Ser. No. 68,532

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1978, 2836385

Int. Cl.[3] **A61K** *31/27;* **C07C** *143/68*

U.S. Cl. 424—300 **4 Claims**

1. A monocarboxylate of phenylguanidinesulfonic acid ester of the formula



wherein X is $—OSO_2—$ or $—SO_2O—$, R is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, —CN or $—CF_3$, R^1 is hydrogen, alkyl having 1 to 5 carbon atoms, methoxymethyl, phenoxymethyl, alkoxy, alkoxyalkyl or aralkyl and R^2 is hydrogen, alkyl, cycloalkyl, cycloalkylalkyl or aralkyl and physiologically acceptable salts thereof with an organic or inorganic acid.

3. A method for combating helminths and liver flukes in humans and animals infected therewith which comprises administering an effective amount of a compound as defined in claim 1.

4,254,144

SUBSTITUTED BENZONITRILES HAVING ANTIVIRAL ACTIVITY

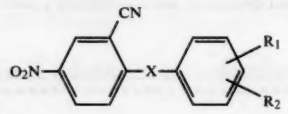
Lowell D. Markley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1980, Ser. No. 115,480

Int. Cl.[3] **A61K** *31/275;* **C07C** *121/60, 121/75, 121/78*

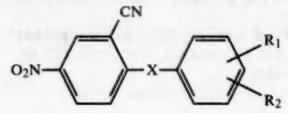
U.S. Cl. 424—304 **49 Claims**

1. A compound of the formula



wherein X represents O or S; R_1 represents bromo, chloro, fluoro, phenoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylaminosulfonyl, diloweralkylaminosulfonyl or benzoyl; and R_2 represents hydrogen, bromo, chloro or fluoro with the proviso that R_2 is hydrogen when R_1 is a substituent other than bromo, chloro or fluoro.

16. A method for inhibiting viruses which comprises contacting viruses or virus host cells with an effective virus inhibiting amount of a compound corresponding to the formula



wherein X represents O or S; R_1 represents bromo, chloro, fluoro, phenoxy, loweralkylthio, loweralkylsulfinyl, loweralkylsulfonyl, loweralkylaminosulfonyl, diloweralkylaminosulfonyl or benzoyl; and R_2 represents hydrogen, bromo, chloro or fluoro with the proviso that R_2 is hydrogen when R_1 is a substituent other than bromo, chloro or fluoro.

4,254,145

TOPICAL APPLICATION OF PROSTAGLANDIN HYPOTENSIVE AGENTS

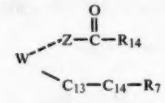
Jay E. Birnbaum, Pomona, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 16, 1978, Ser. No. 934,199

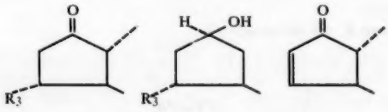
Int. Cl.[3] **A61K** *31/22, 31/215*

U.S. Cl. 424—305 **74 Claims**

1. A process of reducing systemic blood pressure comprising the topical application to a warm-blood animal or human of an effective amount of an optically active prostaglandin compound, of the following formula:



the mirror image thereof, and the racemic mixture thereof wherein W is selected from the group consisting of:



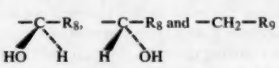
wherein R_3 is selected from the group consisting of hydrogen, hydroxyl and $HOCH_2CH_2S—$; Z is selected from the group consisting of

$—(CH_2)_6—$, $—CH_2—CH\overset{cis}{=}CH—(CH_2)_n—$,

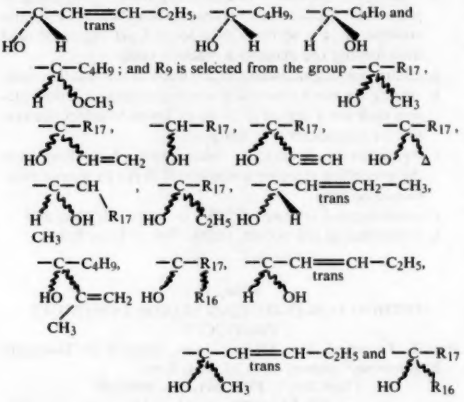
$—(CH_2)_m—S—CH_2—$ and $—(CH_2)_m—O—CH_2—$,

and $—(CH_2)_m—O—CH_2—$,

wherein n and m have the value of from 3 to 5 inclusive; R_{14} is selected from the group consisting of hydroxyl, C_1–C_6 alkoxy, $-CH_2OH$ and $-CH_2OR_{15}$ wherein R_{15} is C_2–C_6 alkanoyl; C_{13}–C_{14} is ethylene or trans-vinylene; R_7 is a moiety selected from the group consisting of



wherein R_8 is selected from the group consisting of



wherein R_{16} is E-1-propenyl or Z-1-propenyl, R_{17} is C_3 to C_7 alkyl; and, when R_{14} is hydroxy, the pharmacologically acceptable cationic salts thereof.

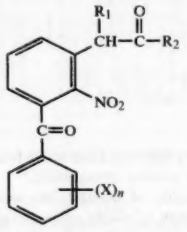
4,254,146

3-BENZOYL-2-NITROPHENYLACETIC ACIDS, METAL SALTS, AMIDES AND ESTERS

David A. Walsh, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Oct. 18, 1979, Ser. No. 86,195
Int. Cl.[3] A61K *31/24;* **C07C** *79/46*
U.S. Cl. 424—309 **18 Claims**

1. A compound selected from the group having the formula:



wherein;

R_1 is hydrogen or lower alkyl,

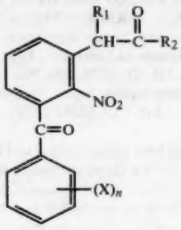
R_2 is OH, OM, O-lower alkyl, NH_2, NH-lower alkyl or N,N-dilower alkyl,

X is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro,

M is a pharmaceutically acceptable cation or a fraction thereof when the cation is multivalent and hydrates thereof

and n is 1–3 inclusive.

7. The method of alleviating inflammation in a living animal body with a minimum of undesirable side effects comprising internally administering to said living animal body an effective amount of a compound selected from the group having the formula:



wherein;

R_1 is hydrogen or lower alkyl,

R_2 is OH, OM, O-lower alkyl, NH_2, NH-lower alkyl or N,N-dilower alkyl,

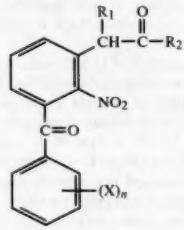
X is hydrogen, halogen, lower alkyl, lower alkoxy trifluoromethyl or nitro,

M is a pharmaceutically acceptable cation or a fraction thereof when the cation is multivalent and hydrates thereof

and n is 1–3 inclusive.

13. A therapeutic composition suitable for alleviation of inflammation with minimal side effects comprising

(a) an effective amount of a compound selected from the group having the formula:



wherein:

R_1 is hydrogen or lower alkyl,

R_2 is OH, OM, O-lower-alkyl, NH_2, NH-lower alkyl or N,N-dilower alkyl,

X is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro,

M is a pharmaceutically acceptable cation or a fraction thereof when the cation is multivalent and hydrates thereof

and n is 1–3 inclusive, and

(b) a pharmaceutically acceptable carrier therefor.

4,254,147

PHARMACEUTICAL COMPOSITION FOR TOTAL PARENTERAL NUTRITION

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed May 23, 1979, Ser. No. 41,645
Claims priority, application Italy, May 25, 1978, 49534 A/78
Int. Cl.[3] A61K *31/205*
U.S. Cl. 424—316 **11 Claims**

1. In the method of increasing in a human the level of nutritional fatty acids selected from the group consisting of oleic acid, linolic acid, palmitic acid, stearic acid and linolenic acid by intravenously administering one or more in vivo hydrolysa-

ble triglycerides of said fatty acid to a human, the improvement which comprises simultaneously administering a quantity of carnitine sufficient to enhance the in vivo oxidation of said fatty acids.

4,254,148

COLDPROOF CHEWING GUM

Koichi Ogawa, Tokyo; Shichigoro Tezuka, Kawasaki; Takashi Maruyama, Hino, and Kazuo Kiyokawa, Higashimurayama, all of Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,461

Claims priority, application Japan, Oct. 31, 1978, 53-133200

Int. Cl.[3] A23G *3/30*

U.S. Cl. 426—3 **5 Claims**

1. A chewing gum base comprising 0 to 15 wt. % of a natural resin, 10 to 20 wt. % of a vinyl acetate resin, 6 to 16 wt. % of an ester gum, 12 to 25 wt. % of a rubber, 12 to 20 wt. % of a wax, 14 to 20 wt. % of an emulsifier and 10 to 20 wt. % of a filler based on the weight of the chewing gum base.

4,254,149

CARBONATED CHEWING GUM

Marvin J. Rudolph, Bethel, and Richard B. Hynson, New Fairfield, both of Conn., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 777,797, Mar. 15, 1977, Pat. No. 4,105,161. This application Apr. 16, 1979, Ser. No. 30,507

Int. Cl.[3] A23G *3/30, 3/00*

U.S. Cl. 426—5 **3 Claims**

1. A compressed, shaped confection comprised of two distinct components having a water activity of about 0.1 to about 0.3 and being capable of surviving long periods of storage when packaged in a moisture-resistant material, said confection comprising a finely-divided pliable bubble gum component of U.S. Standard Sieve Size of less than about 4 and having a moisture content of from about 0.1% to about 5% and a water activity of from about 0.1 to about 0.3 and a finely-divided gasified candy component of U.S. Standard Sieve Size of from about 4 to about 20 containing from 0.05 to 15 milliliters of gas in each gram of candy to provide a pop or sizzle upon being wetted upon eating and having a moisture content of from about 0.1 to about 5% by weight of the gasified candy and a moisture activity of from about 0.1 to about 0.3, said confection being a shaped compressed agglomerate product of said candy and gum components, said candy particles being at least partially adherent to said gum particles, said product containing air pockets as well as gas pockets in the carbonated candy structure effective to provide a soft chew with an improved pleasant mouthfeel.

4,254,150

PROCESS FOR PRODUCING A FOODSTUFF OF CEREAL

Hartwig Fritze, Weingarten; Kurt Koenemann, and Richard Koenemann, both of Neuss, all of Fed. Rep. of Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 970,985

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2757036

Int. Cl.[3] C12P *19/14, 19/20;* **A23K** *1/00*

U.S. Cl. 426—18 **8 Claims**

1. A process for producing foodstuff flakes from cereal by enzymatic conversion of starch in situ to dextrose comprising the steps of

a. forming a mash consisting of 20% to 40% whole cereal grains or grains ground to coarse to medium fine grist and water;

b. allowing the mash to swell for a period of 1–2 hours while maintaining it at a temperature below the gelatinization point of the starch;

c. adding to the swelled mash alpha amylase in an amount between 0.05% and 0.5% based on the dry cereal;

d. adjusting the pH of the mash to 6.5 to 7 by the addition of sodium hydroxide solution;

e. heating the mash resulting from the preceding steps in a steam injection cooker to a temperature of 100° to 110° C., then passing the mash at that temperature through a tube type converter with a retention time of 3 to 5 minutes, and thereafter passing the mash through a circulatory reaction vessel with a retention time of about 1 hour and at a temperature of 95° C. to thereby effect conversion of starch to maltodextrin;

f. cooling the maltodextrin-containing mash, readjusting its pH to a level effective to promote the action of amyloglucosidase by the addition of a second pH regulator, and then feeding the mash to a reaction tank;

g. adding amyloglucosidase to the mash in the reaction tank;

h. storing the mash containing amyloglucosidase in the reaction tank for a period of 24 to 48 hours to effect conversion of maltodextrin to dextrose;

i. drying the whole dextrose-containing mash resulting from the preceding steps on a single roll dryer to form a thermoplastic film;

j. removing and cooling said film to make it friable; and

k. comminuting the cooled, friable film to form flakes.

4,254,151

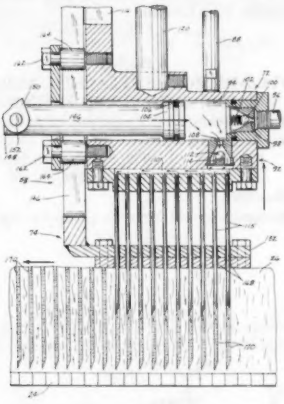
METHOD FOR INJECTING FLUIDS INTO MEAT PRODUCTS

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Jan. 7, 1980, Ser. No. 109,820

Int. Cl.[3] A23L *1/272, 1/31*

U.S. Cl. 426—231 **8 Claims**



1. The method of injecting fluid into a food product selected from meat, fish or poultry, comprising,

injecting a plurality of needles into said food product to create a plurality of cavity voids in said product defined by the shape of the portion of each needle that penetrates said product,

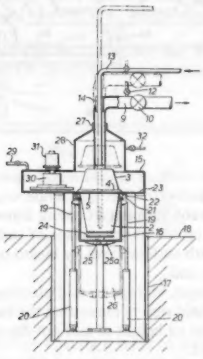
and injecting a metered quantity of fluid through said needles into said cavity voids while said needles are within said food product, said quantity of fluid being metered to be equal substantially to the volume of said cavity voids so as to uniformly inject said fluid into the fat and lean portions of said food product without creating an immediate migration of fluid through said lean portions more than through said fat portions at the time of injection.

4,254,152

PRESERVING FOOD PRODUCTS

Viacheslav J. Janovtchik, London, England, assignor to In. Da. Te. Aktiengesellschaft, Eschen, Liechtenstein

Continuation of Ser. No. 829,104, Aug. 30, 1977, Pat. No. 4,148,933. This application Apr. 6, 1979, Ser. No. 27,703
Claims priority, application United Kingdom, Aug. 31, 1976, 35988/76
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.[3] A23B 7/00
U.S. Cl. 426—399 8 Claims



1. A method of preserving a food product comprising the steps of:

inserting a sealable container into a retracted lower mobile part of a sealable enclosure, which lower mobile part substantially encloses said container;

sealing the enclosure by raising said lower mobile part into sealing engagement with an apertured floor of a lower compartment of a fixed upper part of said enclosure;

admitting steam into said lower compartment of said fixed upper part of the sealed enclosure to create and maintain aseptic conditions therein and sterilize the container;

introducing a body of the food product within an autoclave constituting an upper compartment of said fixed upper part of said enclosure and sterilizing said body of food product in said autoclave;

raising the sterile container within the now aseptic enclosure into proximity with a valved outlet from said autoclave;

transferring the sterile body of food product through said valved outlet directly to said container in the aseptic environment within the sealed enclosure;

lowering the filled container into said lower mobile part of the enclosure;

sealing the container containing the sterile food product within the aseptic environment within the sealed enclosure; and then

unsealing the enclosure by lowering said lower mobile part of said enclosure relative to the sealed container.

4,254,153

PROCESS FOR PREPARING FROZEN PAR-FRIED POTATOES

Nicholas D. Ross; George A. White, both of Moses Lake, Wash., and William L. Allinson, Manhattan Beach, Calif., assignors to Carnation Company, Los Angeles, Calif.

Filed Apr. 13, 1979, Ser. No. 29,608
Int. Cl.[3] A23L 1/216
U.S. Cl. 426—441 7 Claims

1. A process for preparing frozen par-fried potato strips which consists essentially of

peeling, trimming and cutting potatoes into strips,

blanching the potato strips,

dehydrating said strips by first contacting them with circulating ambient air for a period of time sufficient to reduce the weight of the strip by about 8% to 15%, through the loss of both surface moisture and internal moisture from the strips and then contacting the strips with circulating heated air to further reduce the weight of strips by about 8% to 15%, with the total weight loss of the strips during the ambient air drying and the hot air drying being between about 18% to 26%,

equalizing the distribution of moisture in the strips,

par-frying said potato strips in a deep fat bath for about 20 to 90 seconds at a temperature of about 325° F. to 390° F., so that the par-fried strips have a solids content of about 30%–40% by wt., and

freezing the par fried potato strips, whereby the frozen strips when finish fried have a crisp, rigid surface and a mealy internal texture, with the strips remaining crisp and rigid for extended periods of time after finish frying.

4,254,154

DIPEPTIDE SWEETENER COMPOSITIONS

Marvin E. Eisenstadt, Neponsit, N.Y., assignor to Cumberland Packing Corp., Brooklyn, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,041
Int. Cl.[3] A23L 1/236
U.S. Cl. 426—548 6 Claims

1. A sweetening composition, consisting essentially of (a) a dipeptide sweetener in an amount of about 0.5–4% by weight, (b) a glycyrrhizin in an amount of 1–6% by weight, (c) a natural sugar or sugar alcohol in an amount of 87–98% by weight, and (d) cream of tartar in an amount of 0.5–3% by weight.

4,254,155

PREPARING NEOHESPERIDIN DIHYDROCHALCONE SWEETENER COMPOSITION

Basant K. Dwivedi, Randolph, and Prathivadibhayankaram S. Sampathkumar, Parsippany, both of N.J., assignors to Chimicasa GmbH, Chur, Switzerland

Continuation-in-part of Ser. No. 969,391, Dec. 14, 1978. This application Apr. 30, 1979, Ser. No. 34,565
Int. Cl.[3] A23L 1/236
U.S. Cl. 426—548 9 Claims

1. A process of preparing a water-soluble, nondiscoloring, sweetener composition, which process comprises:

(a) admixing from about one part by weight of neohesperidin dihydrochalcone with from about 1 to 100 parts by weight of a water-soluble, organic, polyhydroxy carrier compound and heating the admixture to a temperature of from about 30° C. to 180° C., to form a water-soluble, reaction compound; and

(b) adding from about 0.1% to 15% by weight of the neohesperidin dihydrochalcone of a carboxylic-acid food acidulant, to reduce the pH of the composition to 6.5 or less and provide a nondiscoloring composition.

4,254,156

IMITATION CHEESE BASE

Paul De Socio, Levittown, N.Y.; Morris Kaporsvsky, Montreal, Canada, and Joel S. Tropp, Valley Stream, N.Y., assignors to Jubilee Foods, Inc., Hackensack, N.J.

Filed May 7, 1979, Ser. No. 36,679
Int. Cl.[3] A23L 1/04, 1/187; A23G 3/00
U.S. Cl. 426—565 10 Claims

1. A process for preparing an imitation cheese base especially suited for an imitation cheese cake dessert, the process comprising:

separately preparing the following components:

(1) a custard component by mixing a custard base and a solution of sugar in water and cooking the same until the resulting mixture begins to gel and then permitting the mixture to cool;

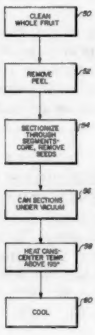
(2) a gelatin component by boiling a mixture of water and gelatine until all of the gelatine has dissolved and then cooling the product to about room temperature;
(3) a dry mixture of sugar and starch by mixing the same together;
(4) an imitation cream cheese component by cooling a commercially available vegetable oil sold as imitation cream cheese to 40°–45° F.;
mixing the several said components in a mixer to obtain a slurry product at a temperature of between about 45° and 50° F.;
aerating the slurry to obtain at 15% to 20% air cell structure; and
freezing the slurry in containers suitable for storage thereof, for a time at least sufficient for the gelatin therein to gelatinize.

4,254,157

PROCESSING OF GRAPEFRUIT SEGMENTS CONTAINING MEMBRANES

Harry Hannan, Jr., Orlando, Fla., assignor to Citrus Central, Inc., Orlando, Fla.

Filed Jun. 29, 1979, Ser. No. 53,382
Int. Cl.³ A23B *7/00*
U.S. Cl. 426—616 **3 Claims**



1. A method for processing grapefruit, having a tough, integral membrane between adjacent fruit segments, said method comprising the steps of:
removing the peel of grapefruit;
sectioning or slicing said peeled fruit through fruit segments and between the membranes;
packing the sections of said fruit in a container;
elevating the temperature of said container and the fruit therein to a center temperature above 195° F., at a temperature below 223° F., for a sufficient time to tenderize said membrane to a strength of about 10 ounces or less, as measured by an Altek Tensile Tester; and thereafter
cooling said container.

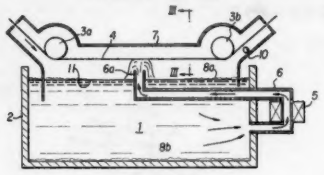
4,254,158

PROCESS FOR ONE-SIDE HOT-DIP COATING

Toshio Fukuzuka, Kobe; Masaaki Urai, Innami, and Kenji Wakayama, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Jan. 30, 1979, Ser. No. 7,820
Claims priority, application Japan, Jan. 1, 1978, 53/9656; Jun. 28, 1978, 53/89630; Jul. 28, 1978, 53/92981
Int. Cl.² C23C *1/02, 1/08, 7/00*
U.S. Cl. 427—8 **8 Claims**

1. A process for one-sided, hot-dip coating of a metal sheet in an apparatus including a molten metal bath, a pair of guide rolls disposed above said bath, an electromagnetic pump and at least one nozzle which comprises:
guiding and causing said metal sheet to be coated to travel over said molten metal bath by means of said pair of guide rolls diposed over above said bath;
sucking a hot-dip coating metal inside said molten metal bath by an electromagnetic pump disposed outside said bath and jetting said hot-dip coating metal through said molten metal bath from said at least one nozzle which protrudes beyond the surface of said bath between said pair of guide rolls;
bringing said hot-dip coating metal thus jetted into contact



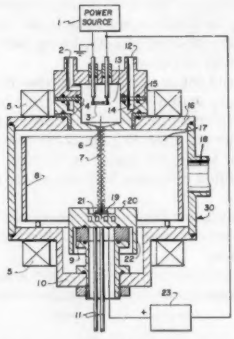
with the lower surface of said metal sheet over its entire range in its transverse direction while said metal sheet is travelling, thereby forming a coating layer of said hot-dip coating metal on the lower surface of said sheet;
measuring the bath surface level by means of a bath surface level detector; and
controlling the input voltage to said electromagnetic pump in response to said step of measuring the bath surface level so as to hold the jet height of said hot-dip coating metal at a constant level.

4,254,159

METHOD OF PRODUCING GOLD-COLOR COATINGS

Hans K. Pulker, Tiesen, Liechtenstein, and Helmut Daxinger, Wangs, Switzerland, assignors to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein

Filed Dec. 20, 1978, Ser. No. 971,327
Claims priority, application Switzerland, Dec. 23, 1977, 015934/77
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—38 **3 Claims**



1. A method of producing gold-color coatings on substrates by evaporating a coating material of metallic titanium or zirconium in a housing having walls defining an evaporation space with a vacuum atmosphere containing N_2 and argon and using an anode connected to a power source to produce a low voltage arc discharge in the vicinity of the coating material and between the anode and a cathode, comprising, maintaining a potential difference between the anode and the substrates with the anode positive with respect to the substrates of a range of from between 5 and 100 volts, maintaining the electrical potential of the substrates between from 0 to 150 volts lower than the

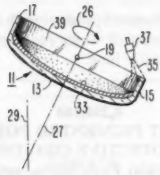
potential of the housing walls defining the evaporation space, coating the substrate at a rate of from between 1 and 15 nanometers per second, and maintaining the N_2 and argon atmosphere so that the partial pressure of the N_2-containing component ranges between 2×10^{-4} and 10^{-2} millibars.

4,254,160

METHOD FOR SLURRY COATING A FACEPLATE PANEL HAVING A PERIPHERAL SIDEWALL

Frederick C. Raih, Marion, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,920
Int. Cl.³ H01J *29/18;* B08B *3/12;* B05D *1/02, 1/30*
U.S. Cl. 427—57 **8 Claims**



1. In a method for coating a layer of particulate material on the inner surface of a faceplate panel for a cathode-ray tube, said panel comprising a viewing window and a peripheral sidewall integrally attached around said window and having a sealing land at the distal edge thereof,

(a) dispensing into said panel a quantity of slurry comprising said particulate material mixed with a liquid vehicle, said quantity including a portion in excess of the amount required to produce said layer,

(b) spreading said quantity of slurry over the inner surface of said window,

(c) then wetting the uncoated inner surface of said sidewall with an aqueous medium,

(d) then passing said excess portion of slurry over said wetted surface for the removal thereof from said panel,

(e) and then removing any residual particulate material from the inner surface of said sidewall adjacent said sealing land.

4,254,161

PREVENTION OF LOW PRESSURE CHEMICAL VAPOR DEPOSITION SILICON DIOXIDE UNDERCUTTING AND FLAKING

Bernard M. Kemlage, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1979, Ser. No. 66,964
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—94 **10 Claims**

1. A method for forming a silicon dioxide layer on a semiconductor substrate in the manufacture of an integrated circuit wherein the said layer is not subject to degradation during subsequent oxidation cycles comprising:

forming a silicon nitride layer of greater than about 50 Angstroms in thickness over a surface of said substrate; and

mixing a gaseous chlorosilane with a nitrous oxide oxidizing gas at a temperature between about 800° C. to 1200° C. in a pressure of less than about 5 torr to deposit said silicon dioxide layer onto said silicon nitride layer, wherein the thickness of said silicon dioxide layer is between about 2500 and 100,000 Angstroms.

4,254,162

PHENOXY ACETIC ACID DERIVATIVE, ITS PREPARATION AND THERAPEUTIC USE

Andre Esanu, Paris, France, assignor to Societe d'Etudes de Produits Chimiques, Paris, France

Continuation of Ser. No. 897,287, Apr. 17, 1978. This application Nov. 21, 1979, Ser. No. 97,037
Claims priority, application United Kingdom, Apr. 22, 1977, 16789/77
Int. Cl.³ A61K *31/38*
U.S. Cl. 424—275 **6 Claims**

1. A method of treating choleresis comprising the oral administration of a therapeutic composition comprising a choleretically effective amount of a compound selected from the group consisting of [2-isopropyl-4-(2-thenoyl)-5-methyl]-phenoxy acetic acid and alkali metal salts thereof together with a pharmaceutically acceptable carrier therefor.

4,254,163

STRIPPABLE RESISTS

John R. Piazza, East Amwell Township, Hunterdon County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 13, 1979, Ser. No. 29,951
Int. Cl.³ C23F *1/02*
U.S. Cl. 427—96 **34 Claims**

1. A method of forming a strippable resist comprising:

(a) applying a solvent-free, non-dryable ink to a substrate;

(b) applying a powdered resin over said substrate, said resin adhering to those areas of said substrate having ink applied thereto, said powdered resin being related to said ink in that said ink is a primary plasticizer for said powdered resin;

(c) removing excess powdered resin not retained by said ink from the surface of said substrate; and

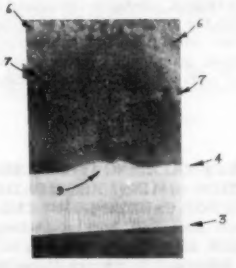
(d) heating the substrate to a temperature so as to fuse said powdered resin to form a strippable resist.

4,254,164

METHOD OF DEPOSITING COPPER ON COPPER

Mieczyslaw Budzich, and Forest G. Fitz, Jr., both of Lexington, S.C., assignors to Nassau Recycle Corporation, Staten Island, N.Y.

Filed Jul. 6, 1979, Ser. No. 55,867
Int. Cl.³ B32B *35/00;* B05D *3/02, 3/12, 1/08*
U.S. Cl. 427—142 **4 Claims**



1. The method of depositing copper on a copper base comprising the two steps of:

(a) heating the base;

(b) flame spraying molten copper onto an area of the heated base until globules are observed forming in the area indicative of a build-up of a thermal barrier oxide;

(c) mechanically removing the globules from the heated base; and

(d) repeating steps (b) and (c).

4,254,165

METHOD OF FORMING A FILLED POLYMER COATING ON AN INTERNAL CYLINDRICAL SURFACE AND ARTICLE PRODUCED THEREBY

Edwin H. Phelps, and William E. Snow, both of Birmingham, Ala., assignors to American Cast Iron Pipe Company, Birmingham, Ala.

Filed Nov. 30, 1977, Ser. No. 856,241
Int. Cl.[3] B05D *7/22, 3/00;* **B32B** *1/08*
U.S. Cl. 427—183 **17 Claims**

1. A method of forming a filled polymer coating on an internal, cylindrical, metal surface comprising:

(a) providing a homogenous mixture of particles of a low or medium density polyethylene or other olefin polymer or copolymer and particles of an inert filler having a particle size in the range of from about 4 mesh to about 325 mesh, the weight ratio of polymer to filler ranging from about 1:2 to about 10:1 within the space defined by an internal, cylindrical, metal surface which is rotating about its longitudinal axis, said internal, metal surface being at a temperature above the melting point of said polyethylene, olefin polymer or copolymer, but below the melting or decomposition point of said filler,

(b) uniformly depositing said mixture of particles on said hot, rotating, internal metel surface at a rate such that the mixture is held substantially stationary at the point of deposition with respect to the internal metal surface by the centrifugal force of the rotating cylindrical surface whereby the polymer or copolymer component of the mixture melts to form a viscous, filled film which remains substantially stationary with respect to said internal metal surface by reason of said centrifugal force; and,

(c) cooling said coating to a temperature below the melting point of said polyethylene, olefin polymer or copolymer.

4,254,166

COMPOSITION FOR REDUCING THE STRENGTH OF ICE

James O. Glanville, and Gene R. Walters, both of Roanoke, Va., assignors to Wen-Don Corporation, Roanoke, Va.

Filed Dec. 13, 1979, Ser. No. 103,418
Int. Cl.[3] C09K *3/18*
U.S. Cl. 427—212 **17 Claims**

1. A composition for weakening ice formed between particulate materials consisting essentially of from 5–90% by weight of a water-soluble organic compound which is non-ionizing or only slightly ionizing selected from the group consisting of alkanols, diols, polyols, ketones, ethers, carboxylic acids and mixtures thereof; and from 1–20% by weight of a highly soluble inorganic or organic substance containing ammonium ion and selected from the group consisting of ammonium acetate, ammonium nitrate, ammonium sulfate, ammonium sulfamate, ammonium formate, ammonium cyanate, ammonium thiocyanate, ammonium carbonate, ammonium pentaborate and mixtures thereof.

4,254,167

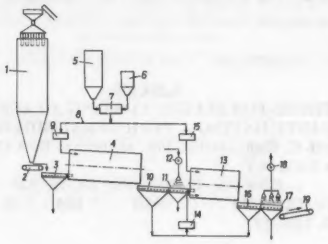
PROCESS OF TREATING SPONGE IRON FOR PROTECTION AGAINST REOXIDATION AND APPARATUS FOR CARRYING OUT THE PROCESS

Horst Sulzbacher; Kurt Stift, both of Leoben, and Günther Saiger, Trofaiach, all of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellshaft, Vienna, Austria

Filed Jul. 14, 1978, Ser. No. 924,565
Claims priority, application Austria, Aug. 25, 1977, 6174/77
Int. Cl.[3] B05D *7/00*
U.S. Cl. 427—216 **14 Claims**

1. A process for treating sponge iron to protect it against reoxidation and/or corrosion during storage and transit comprising the steps of

tumbling sponge iron which is in particle form with a preprepared blend of caustic lime powder and an adhesion promoting additive selected from the group consisting of iron oxide or mixtures thereof with iron to produce a coated product, said blend containing 1 to 20% by weight iron oxide; and



then moistening the coated product with an amount of water less than the amount of water required for complete hydration of the caustic lime.

4,254,168

CHIP-RESISTANT PIGMENTED POLYURETHANE PROTECTIVE COATING

Norman J. Monson, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 27, 1979, Ser. No. 61,404
Int. Cl.[3] C08L *61/20, 61/26*
U.S. Cl. 427—409 **4 Claims**

1. Method of applying to a substrate a chip-resistant pigmented polyurethane protective coating particularly suited for matching existing pigmented protected surfaces on said substrate wherein said existing protected surface is provided by an acrylic lacquer, acrylic enamel or nitrocellulose lacquer containing the same pigmentation, said method comprising:

(1) blending

(a) liquid curable primary amine-free non-coloring polyurethane coating composition curable to form a polyurethane having an elongation at break of at least 75% and being formed of a catalyzed mixture of polyester polyol having more than one terminal hydroxyl group and an equivalent weight between 250 and 1500, sufficient polyisocyanate compound characterized by having at least two terminal isocyanate groups each attached to a non-benzenoid carbon to provide an NCO-:OH ratio of about 2:1 to about 0.8:1, and compatible organic solvent to make a solids content about 20% to 70% by weight and a vicosity of about 20 to 300 cps as determined using a Brookfield RVF viscometer at 25° C. using a No. 1 spindle at 20 rpm; and

(b) liquid pigmented protective coating composition selected from the group consisting of acrylic lacquer, acrylic enamel and nitrocellulose lacquer reduced with compatible solvent for use in a wet volume ratio of pigmented protective coating composition to polyurethane coating composition of about 2:1 to 1:20;

(2) applying at least one coating of the resultant blend to said surface to provide a uniform dry coating thickness of from about 1 to 20 mils; and

(3) permitting said coating to dry.

4,254,169

MULTI-LAYER BARRIER FILM

George O. Schroeder, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 28, 1978, Ser. No. 973,943
Int. Cl.[3] B32B *27/08;* **B65D** *11/00*
U.S. Cl. 428—35 **36 Claims**

1. A delamination resistant multi-layer structure comprising a barrier layer of a substantially pure polymer or copolymer of

vinyl alcohol adhered directly to a layer of a modified polyolefin which consists essentially of a polyolefin polymer or copolymer blended with a graft copolymer of polyethylene and an unsaturated fused ring carboxylic acid anhydride.

18. A delamination resistant coextruded multi-layer structure comprising

(a) a substantially pure ethylene vinyl alcohol copolymer core layer;

(b) a modified polyolefin layer on each side of and adjacent the core layer, the modified polyolefin consisting essentially of a graft copolymer of polyethylene and an unsaturated fused ring carboxylic acid anhydride blended with a polyolefin selected from the group consisting of polyethylene and ethylene vinyl acetate copolymer;

(c) an outer polymer layer over at least one of the modified polyolefin layers, the outer layers being independently selected from the group which consists of polyethylene, polypropylene, ethylene vinyl acetate copolymer, ethylene acrylic acid copolymer, blends of two or more of the foregoing polymers, nylon, and ionomers.

4,254,170

PROCESS FOR RENDERING POLYESTER HOLLOW BODIES GASTIGHT

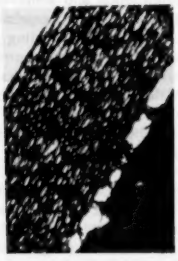
Gilbert Roullet, Tremblay les Gonesse, and Pierre Legrand, Antony, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 8, 1979, Ser. No. 10,219

Claims priority, application France, Feb. 13, 1978, 78 03939

Int. Cl.[3] **B29C** *17/07;* **B32B** *27/08;* **B65D** *23/02*

U.S. Cl. 428—36 **12 Claims**



1. In a process for producing bioriented polyester composite hollow bodies which includes the steps of making a preform, transferring the preform into a mold, bidrawing-blowing the preform under biorientation conditions to produce a hollow body, followed by cooling and removing the hollow body from the mold, the improvement comprising coating at least one wall of the preform with an aqueous composition composed of at least two imcompatible polymers, one of which is a polyvinyl alcohol in solution in water, and the other or others of which is a latex of relatively water insensitive polymers, in which the weight ratio of polyvinyl alcohol/latex polymer is between 0.4 and 3, to provide a two-phase system in which the polyvinyl alcohol solution forms a continuous phase and the water insensitive polymer is in the dispersed phase, drying the coating, followed by said bidrawing-blowing.

12. Bioriented polyester composite hollow bodies, produced by the process of claim **1**, having a coating with a two-phase structure formed of a bioriented continuous phase composed of a moisture insensitive polymer and a laminar, bioriented discontinuous phase composed of polyvinyl alcohol.

4,254,171

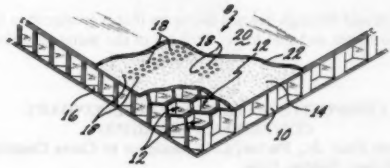
METHOD OF MANUFACTURE OF HONEYCOMB NOISE ATTENUATION STRUCTURE AND THE RESULTING STRUCTURE PRODUCED THEREBY

Stanley L. Beggs, Chula Vista; Frank J. Riel, San Diego, and Dale W. R. Lawson, Bonita, all of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Continuation-in-part of Ser. No. 604,200, Aug. 13, 1975. This application Aug. 6, 1979, Ser. No. 64,054

Int. Cl.[3] **B32B** *3/12*

U.S. Cl. 428—116 **7 Claims**



1. Method of manufacturing honeycomb noise attenuation material having structural integrity positioned adjacent to high speed air and gas flow surfaces of a high speed aircraft, including a central honeycomb core sandwiched between an imperforate sheet and a perforate sheet having a plurality of perforations therethrough, with a layer of porous fibrous material bonded thereto, wherein the combined perforate sheet and layer of porous fibrous material have a predetermined open area and resulting flow resistance therethrough, said method comprising the steps of:

(a) Cleaning and degreasing the component surfaces to be bonded together;

(b) coating one surface of the perforated sheet with a selected first adhesive of a low solid solvent solution;

(c) removing the solvent from the first adhesive coating the step (b) to raise the viscosity index of the adhesive;

(d) securing together under pressure said perforate sheet and the first adhesive coated surface adjacent the porous fibrous material;

(e) curing the substantially solvent-free first adhesive of step (c);

(f) applying a layer of a selected second adhesive for bonding together the core and the perforation exposed surface of the combined perforated sheet and porous fibrous material and the imperforate sheet to the other core surface;

(g) securing together the imperforate sheet, the central core and the combined perforate sheet and the porous fibrous material; and

(h) applying pressure while curing the second adhesive coating on the secured together components.

4,254,172

BASEBOARD FOR PRINTED CIRCUIT BOARD

Hiroshi Takahashi, Kasama; Kiyoshi Nakao, Yuki, and Masaaki Katagiri, Houya, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 833,359, Sep. 14, 1979, Pat. No. 4,188,415. This application Apr. 27, 1979, Ser. No. 34,146

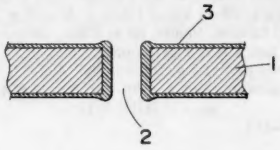
Claims priority, application Japan, Sep. 14, 1976, 51-110268

Int. Cl.[3] **B05D** *5/12*

U.S. Cl. 428—131 **40 Claims**

1. A baseboard for a printed circuit board which comprises a metal substrate having through-holes and a resin coating covering the overall surface of the metal substrate including the inner wall surfaces of the through-holes, characterized in that said resin coating comprises at least one coat layer of resin covering the upper and lower surfaces and the inner walls of the through-holes of the metal substrate and having, at the

circumferential edges formed by the intersection of the upper and the lower surfaces of said metal substrate with the inner



walls of said through-holes, a thickness that is greater than that on said upper and said lower surfaces of the metal substrate.

4,254,173

COMPOSITE MATERIAL FOR SECONDARY CONTAINER PACKAGING

A. Dean Peer, Jr., Parker, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Nov. 20, 1978, Ser. No. 961,955
Int. Cl.³ B32B *3/00, 23/08*
U.S. Cl. 428—204 **26 Claims**

1. A secondary container packaging material, having an internal tearing resistance and a tensile load selected for a particular packaging application, consisting essentially of:

an inner paper material providing at least 85% of said tensile load;

an outer decorative plastic film, laminated to said paper material, and providing at least 28% of said tearing resistance; and

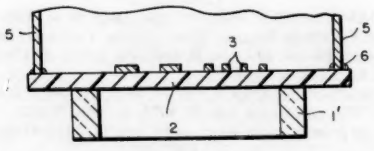
an adhesive layer between said plastic film and said paper material for bonding said plastic film to said paper material.

4,254,174

SUPPORTED MEMBRANE COMPOSITE STRUCTURE AND ITS METHOD OF MANUFACTURE

Dale C. Flanders, Waltham; Henry I. Smith, Sudbury, and Muriel A. DaLomba, Dorchester, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 800,759, May 26, 1977, Pat. No. 4,170,512. This application Mar. 29, 1979, Ser. No. 24,898
Int. Cl.³ B32B *15/08, 27/00*
U.S. Cl. 428—209 **2 Claims**



1. A supported membrane x-ray mask structure comprising:

a mechanical support ring,

an optically smooth film of polyimide plastic of less than six micrometer thicknesses bonded to said support ring to peripherally support said film only along the ring, said film being unsupported within the interior of said ring, and

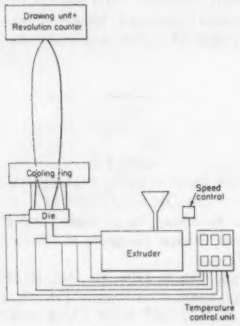
an x-ray absorber material bonded to said plastic film and being patterned to form an absorption pattern located within the interior unsupported region of said plastic film.

4,254,175

MULTILAYER THERMOPLASTIC FILM LAMINATE

Josef Kubat, Solparksvägen 3,, 171 35 Solna, and Kenneth S. Berggren, Delbancogatan 9 A, 413 35 Mölndal, both of Sweden

Division of Ser. No. 830,579, Sep. 6, 1977, Pat. No. 4,177,103, which is a division of Ser. No. 630,786, Nov. 11, 1975, Pat. No. 4,076,568, which is a continuation of Ser. No. 448,640, Mar. 6, 1974, abandoned. This application May 2, 1979, Ser. No. 35,285
Claims priority, application Sweden, Mar. 16, 1973, 7303751
The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.
Int. Cl.³ B28B *21/52;* **B29F** *3/00;* **B32B** *7/02, 31/30*
U.S. Cl. 428—213 **1 Claim**



1. A multilayer thermoplastic film laminate having high strength in both longitudinal and transverse directions, prepared from a continuous process comprising processing thermoplastic material in an extruder, feeding said material into a film blowing die having several concentric slots, stretching, blowing, bonding and winding-up said material, and wherein the thermoplastic material for the exterior layer of said laminate is fed through an exterior slot having a diameter at least four times larger than the diameter of the slot through which the thermoplastic material for the interior layer of said laminate is fed, said layers being bonded together when the exterior layer has been oriented to the desired extent in the longitudinal direction by stretching and the interior layer has been oriented to the desired extent in the transverse direction by blowing by means of a gas medium, said bonding occurring before any of the thermoplastic material layers has cooled to a temperature corresponding to the frost point of the thermoplastic material in question and otherwise before any of the thermoplastic material has lost its viscous flowability.

4,254,176

NOVEL TRANSPARENT POLYURETHANE POLYUREA FILMS FOR LAMINATION OF GLAZING MATERIALS AND THEIR METHOD OF PRODUCTION

Hanns P. Müller, Leverkusen; Wolfgang Oberkirch, Cologne; Kuno Wagner, and Bernd Quiring, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

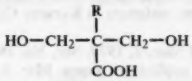
Division of Ser. No. 833,311, Sep. 14, 1977, Pat. No. 4,139,674. This application Sep. 29, 1978, Ser. No. 947,121
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1976, 2644434
Int. Cl.³ B32B *17/10;* **C08G** *18/32;* **B29D** *7/02*
U.S. Cl. 428—220 **4 Claims**

1. A process for the production of polyurethane polyurea film about 0.1 to 5 mm in thickness suitable for lamination to glass comprising

(a) dissolving in an inert solvent a polyurethane polyurea comprising the reaction product of

(i) dihydroxy compounds having molecular weights between about 300 and 6,000 selected from the group consisting of polyesters and polyethers,

(ii) dihydroxy carboxylic acids corresponding to the formula



wherein R represents H, or a C_1 to C_4 alkyl radical,

(iii) optionally aliphatic or cycloaliphatic diols having molecular weights of between about 62 and 300,

(iv) diisocyanates having exclusively aliphatically and cycloaliphatically bound isocyanate groups, and

(v) organic diamines containing aliphatically and cycloaliphatically bound primary amino groups and having molecular weights between about 60 and 3,000, wherein the equivalent ratio of iv:(i+ii+iii) is between about 1.1:1 and 4:1, the equivalent ratio of v:(i+ii+iii) is between about 0.1:1 and 3:1, the molar ratio of i:ii is between about 1:0.01 and 1:12, and the molar ratio of i:iii is between about 1:0 and 1:10, said polyurethane polyurea having

(1) a molecular weight greater than about 10,000,

(2) a urea group content of between about 1 and 20 wt. %, and

(3) a content of lateral carboxyl groups directly attached to the main chain of the molecule of between about 0.001 and 10 wt. %,

(b) casting onto a polished metal surface, and

(c) evaporating the solvent.

3. The product of the process of claim **1**.

4,254,177

FIRE-RETARDANT PRODUCT AND METHOD OF MAKING

Glenn E. Fulmer, Clarksville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 7, 1979, Ser. No. 36,955

Int. Cl.[3] **B32B** *5/20, 7/04*

U.S. Cl. 428—256 **18 Claims**

1. An article having increased fire-retardant properties comprising a foraminous core structure and an adherent outer protective layer made of a hydrophilic polyurethane foam containing large amount of fire-retardant fillers, wherein the adherence between the core and said polyurethane coating is primarily obtained either

(a) due to the adhesive nature of said polyurethane as it foams around the foraminous core in combination with the mechanical interlock obtained as said polyurethane foam flows into the foraminous core, or

(b) due to the mechanical interlock obtained as the core is foamed into the inside foraminous structure of a previously formed outer protective layer of said polyurethane foam.

15. The article according to claim **1**, wherein the core is a flexible cushioning or bedding product.

16. The article according to claim **15**, wherein the core is an innerspring construction.

4,254,178

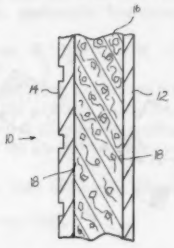
MATERIAL FOR PRODUCING A LAYERED BUILDING PANEL

Carl W. Church; Roderick C. Church, and Daniel K. Church, all of 814 W. Jefferson Blvd., Mishawaka, Ind. 46544

Filed Nov. 5, 1979, Ser. No. 91,466

Int. Cl.[3] **B32B** *3/26*

U.S. Cl. 428—310 **19 Claims**



1. A building panel comprising an inner layer and an outer layer, said inner and outer layer being formed from a facing material consisting of a mixture of ureaformaldehyde resin, water, plaster and an HCl curing agent, an insulative core material separating said inner and outer layers.

10. The panel of claim **1** wherein said core material is of a styrofoam composition.

4,254,179

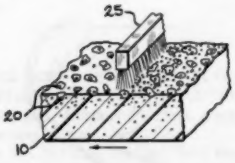
FRAGRANCE IMPREGNATED FOAM AND METHOD OF MAKING THE SAME

William S. Carson, III, Woodland, Calif.; Louis A. Carson; Christopher E. Carson, both of Swanton, Ohio, and Larry Friedrich, Toledo, Ohio, assignors to Scottdel, Inc., Swanton, Ohio

Filed Feb. 22, 1979, Ser. No. 14,227

Int. Cl.[3] **A61K** *7/46;* **C11B** *9/00;* **B01J** *13/02;* **B32B** *3/00*

U.S. Cl. 428—311 **1 Claim**



1. A fragrance impregnated foam comprising a generally planar body of porous foam having an upper surface containing open voids, a plurality of frangible microcapsules containing a fragrance positioned within such voids, and a semi-pervious film adhered to said upper surface covering said open voids and said microcapsules therein, whereby the fragrance of said particles migrates through and is liberated from said plastic film over an extended period of time.

4,254,180

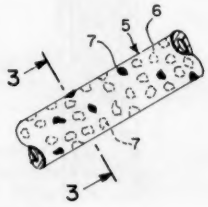
THROMBO-RESISTANT NON-THROMBOGENIC OBJECTS FORMED FROM RESIN-GRAPHITE MIXTURES

William M. Kline, Gloversville, N.Y., assignor to Medical Evaluation Devices & Instruments Corp., Gloversville, N.Y.

Division of Ser. No. 938,051, Aug. 30, 1978, abandoned. This application Jan. 2, 1979, Ser. No. 155

Int. Cl.[3] A61F *1/00*

U.S. Cl. 428—323 **8 Claims**



1. A thrombo-resistant non-thrombogenic object for use within the vascular system of an animate being and including; a body formed from a mixture of a resin and colloidal graphite and having exposed surface areas, the exposed surface areas of said body having been etched to expose surfaces of a multitude of particles of said colloidal graphite; a coating of a cationic surface active agent covering the etched surface areas of said body and the exposed surfaces of said particles of colloidal graphite; and a coating of heparin applied over said cationic surface active agent coating.

4,254,181

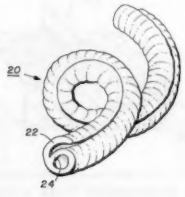
FILAMENTS HAVING ALTERNATE S-TWISTED AND Z-TWISTED HELICAL SECTIONS PRODUCED BY CRIMPING FILAMENTS PROVIDED WITH AN ECCENTRIC ANISOTROPY OF SHRINKABLE PROPERTY BY A PREFERENTIAL COOLING ON ONE SIDE UPON EXTRUSION THEREOF THROUGH A SPINNERET

James E. Bromley, and Jing-Peir Yu, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 778,913, Mar. 28, 1977, Pat. No. 4,176,150. This application Mar. 20, 1978, Ser. No. 888,280

Int. Cl.[3] D01D *5/22*; D02G *1/00, 3/00*

U.S. Cl. 428—371 **7 Claims**



1. A filament having crimp comprising alternating S-twisted and Z-twisted helically coiled regions connected by twist reversal regions, said filament having a cross-section comprising a spiral wherein the outer portion of said spiral lies at the inside of the coils of said helically coiled regions and having a crimp of at least 8%.

4,254,182

POLYESTER SYNTHETIC FIBER CONTAINING PARTICULATE MATERIAL AND A METHOD FOR PRODUCING AN IRREGULARLY UNEVEN RANDOM SURFACE HAVING RECESSES AND PROJECTIONS ON SAID FIBER BY CHEMICALLY EXTRACTING SAID PARTICULATE MATERIAL

Shinji Yamaguchi; Takao Akagi; Takaakira Tsuji; Katsura Maeda; Masao Kawamoto, all of Kurashiki, and Akira Kubotsu, Soja, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 2, 1979, Ser. No. 16,750

Claims priority, application Japan, Mar. 8, 1978, 53/27088

Int. Cl.[3] B44C *1/22*; D02G *3/00*; D06M *5/02*

U.S. Cl. 428—372 **10 Claims**

1. A polyester synthetic fiber having an irregularly uneven random surface constituted by recesses and projections, said recesses and projections (a) satisfying the condition that

$$0.2 \text{ micron} < X < 0.7 \text{ micron}$$

where X is the distance from the deepest point of a recess to that of the recess adjacent thereto in the fiber circumferential direction perpendicular to the fiber axis, (b) being distributed at a density of from 10 to 50 per distance of 10 microns as measured in the fiber circumferential direction perpendicular to the fiber axis, and (c) having additional microfine recesses and projections within the size range of 50 to 200 millimicrons distributed thereon.

2. A fine-particle-containing polyester synthetic fiber which contains from 0.5 to 10 weight % of fine particles less than 100 millimicrons in diameter, there being at least 5 second-order particles having a size of from 0.1 to 0.5 microns per 10 square microns with no more than 20 second-order particles exceeding 5 microns present per 1 mm^3 of fiber, said second-order particles being defined as particle groups each presenting, on a picture taken on an electron microscope and magnified to such an extent that each primary single particle can be identified, a state in which the neighboring primary particles are so close to each other that the distance between the centers of said neighboring primary particles is less than twice the diameter of one primary particle.

3. The fine-particle-containing polyester synthetic fiber of claim 2 wherein said fine particles are silica particles.

7. A process for producing a polyester synthetic fiber having an irregularly uneven random surface constituted by recesses and projections, said recesses and projections (a) satisfying the condition that

$$0.2 \text{ micron} < X < 0.7 \text{ micron}$$

where X is the distance from the deepest point of a recess to that of the recess adjacent thereto in the fiber circumferential direction perpendicular to the fiber axis, (b) being distributed at a density of from 10 to 50 per distance of 10 microns as measured in the fiber circumferential direction perpendicular to the fiber axis, and (c) having additional microfine recesses and projections within the size range of 50 to 200 millimicrons distributed thereon, said process comprising subjecting a fine-particle-containing polyester synthetic fiber of claim 2 to a surface dissolution/erosion treatment with a solvent capable of dissolving or decomposing said fiber.

4,254,183

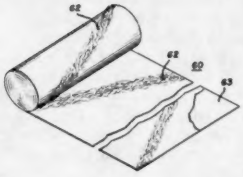
BIAXIAL FILM PROCESS AND ROTARY APPARATUS THEREFOR

James L. Nash; Stanley J. Polich, both of Glens Falls, and Philip H. Carrico, Saratoga, all of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Division of Ser. No. 794,042, May 5, 1977, Pat. No. 4,112,034. This application Apr. 10, 1978, Ser. No. 895,138

Int. Cl.[3] B29D *23/09;* H01G *4/18;* B32B *15/08*

U.S. Cl. 428—213 3 Claims



1. As an article of manufacture, an electrical capacitor dielectric comprising a biaxially oriented polypropylene single film strip having opposed longitudinal edges, said strip having been longitudinally slit from a wider strip, and said slit strip having a film defect irregularity therein which repeats itself in a longitudinal series of continuous lines progressing diagonally along the said slit strip in the machine direction (MD) and one cross-machine direction, (CMD) and then reverses to a longitudinal series of continuous lines along the strip in the same said machine direction (MD) and an opposite cross-machine direction (CMD) and a metallized layer coating on said slit strip.

4,254,184

VIBRATING MEMBER FOR ACOUSTIC TRANSDUCER AND METHOD FOR MANUFACTURING THE SAME

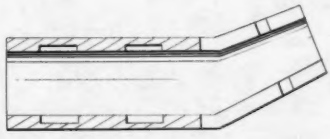
Tsunehiro Tsukagoshi; Shin-ichi Suzuki, and Hitomi Ogino, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 28, 1976, Ser. No. 691,255

Claims priority, application Japan, May 30, 1975, 50-64103

Int. Cl.[3] G10K *13/00;* G11B *3/02*

U.S. Cl. 428—408 27 Claims



1. A method of fabricating a vibrating member suitable for use as the vibrating member of an acoustic vibrating system, said method being of the type wherein a first material is formed into the shape of a vibrating member, the improvement characterized by diffusing into at least one surface of said first material a second material selected from the group consisting of boron, nitrogen, silicon, and a material having as its main constituent boron, nitrogen or silicon.

4,254,185

LIQUID COATING COMPOSITION BASED ON AN ESTER THIOL AND AN AMINOPLAST, A PROCESS FOR COATING A SUBSTRATE WITH SUCH A COMPOSITION, AND THE SUBSTRATE THUS MANUFACTURED

Roelof Buter, Dieren, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed Mar. 23, 1979, Ser. No. 23,303

Claims priority, application Netherlands, Mar. 31, 1978, 7803423

Int. Cl.[3] B32B *15/08, 27/42*

U.S. Cl. 428—460 5 Claims

1. A method for coating a substrate which comprises

(1) applying to the substrate a substantially anhydrous composition which is adapted for application to the substrate when (a) and (b) are 100% of the compsition's binder and the binder

(a) is an ester thiol having the formula

$$R_1[O—CO—R_2—SH]_n$$

wherein R_1 is a radical formed by removal of hydroxyl groups from an organic polyhydroxyl compound having 2 to 18 carbon atoms and R_2 is a saturated hydrocarbon radical having 1 to 6 carbon atoms or an aromatic ring having 6 carbon atoms, n is an integer of 2 to 4 and the molecular weight is from 178 to 600; and

(b) is an aminoplast curing agent; and

(2) heating the resulting coating until cured.

4,254,186

PROCESS FOR PREPARING EPOXY LAMINATES FOR ADDITIVE PLATING

Mario A. Acitelli, Endwell, and James T. Woods, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,125

Int. Cl.[3] B32B *31/00;* B05D *5/12*

U.S. Cl. 428—462 18 Claims

1. A method for adhering an electroless plated metal to an insulating base impregnated with an uncured thermosat resin which comprises (A) coating a surface of a removable transfer material with an uncured nitrile rubber/phenolic thermosetting resin adhesive wherein the nitrile rubber consists essentially of an acrylonitrile/butadiene copolymer or an acrylonitrile/butadiene/styrene terpolymer, (B) bringing the coated surface of said transfer base material into contact with a surface of the insulating base to form a composite, (C) heating the composite under conditions to simultaneously cure the adhesive and the thermosetting resin of the insulating base, with said adhesive not being subjected to a temperature above about 150° F. prior to step (C), removing the transfer material and, (E) electroless plating a metal on the adhesive surface of the insulating base.

4,254,187

PAPER PLIES IMPREGNATED WITH OIL MODIFIED PHENOLIC RESOLE VARNISH

LeRoy A. Claybaker, Coshocton, Ohio, assignor to General Electric Company, Coshocton, Ohio

Division of Ser. No. 562,526, Mar. 27, 1975, Pat. No. 4,043,954. This application Nov. 29, 1976, Ser. No. 745,733

Int. Cl.[3] C08L *91/00*

U.S. Cl. 428—498 5 Claims

1. A laminate of a plurality of paper plies having as the impregnating varnish a product made by (a) reacting a phenol moiety with tung oil in the presence of strong acid and (b) reacting the product of (a) in an alcohol solvent with an aldehyde moiety in the presence of an amine catalyst using as the alcohol solvent a mixture consisting of, by weight, from 15 to 50 percent methyl alcohol and 85 to 50 percent isopropyl

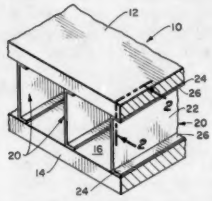
alcohol, the reaction product of (b) being dissolved in a solvent.

4,254,188

METALLIC CORE PANEL AND METHOD OF MAKING SAME

James R. Campbell, South Laguna, and Roy L. Anspach, Anaheim, both of Calif., assignors to Thomas P. Mahoney and Donald A. Ruston, both of Balboa Island, Calif.

Filed Oct. 2, 1978, Ser. No. 948,012
Int. Cl.[3] B23P 3/00; B32B 3/06
U.S. Cl. 428—594 **15 Claims**



1. In a welded honeycomb core metallic panel, the combination of: a first metallic face sheet having an inner surface; a second metallic face sheet having an inner surface disposed in spaced relationship with said first face sheet to define a cavity between said inner surfaces of said sheets; a plurality of interconnected, elongated metal core strips having marginal flanges disposed parallel to and in contact with said inner surfaces of said face sheets, said marginal flanges of each strip being defined by plural layers of metal; and said plural layers of metal being welded to each other and to the inner surfaces of said face sheets to provide a honeycomb core structure maintaining said face sheets in interconnected spaced relationship with each other.

12. In a composite metallic honeycomb core panel, the combination of: a first metallic face sheet; a second metallic face sheet, the inner surfaces of said first and second face sheets being disposed in spaced relationship to provide a cavity of predetermined dimension therebetween; a metallic honeycomb core structure located in said cavity and consisting of a plurality of securement core strips, said core strips being internested and connected with one another to define the aforesaid honeycomb core structure and having securement portions on the upper and lower extremities thereof disposed in contiguity with the aforesaid inner surfaces of said face sheets, said securement portions consisting of plural layers of metal disposed substantially parallel to said inner surfaces of said first and second face sheets; and securement means for affixing said securement portions in structural relationship with said inner surfaces of said face sheets, said securement means consisting of a continuous series of spot weldments through said plural layers of said securement portions and fastening said plural layers to said inner surfaces.

4,254,189

DISC HAVING SUBSTRATE, INTERMEDIATE LAYER AND MAGNETICALLY SENSITIVE LAYER WHEREIN INTERMEDIATE LAYER HAS MELTING POINT LESS THAN ANNEALING TEMPERATURE OF SUBSTRATE BUT HIGHER THAN PROCESSING TEMPERATURE OF MAGNETICALLY SENSITIVE LAYER

Robert D. Fisher, Cupertino, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Jul. 5, 1979, Ser. No. 55,085
Int. Cl.[3] B05D 1/38; B32B 7/02, 31/20, 31/08
U.S. Cl. 428—626 **9 Claims**

1. A structure with improved surface smoothness comprising a substrate, a magnetically sensitive coating, and an intermediate layer interposed between said substrate and said magnetically sensitive coating wherein

the material of said intermediate layer has the properties of spreading over said substrate material when said intermediate layer is elevated to its melting point,

the material of said intermediate layer has the property of melting at a temperature less than the annealing temperature of said substrate material, and

the material of said intermediate layer has the property of melting at a temperature greater than the subsequent processing temperatures for application and/or curing of said magnetically sensitive layer.

7. The method of manufacturing a structure of improved surface smoothness comprising the steps of:

(a) providing a substrate material,

(b) applying a thin layer of chromium to said substrate,

(c) applying a filler material to said chromium layer, said filler material having a melting point less than the "annealing" or "melting" point of said substrate, and said chromium layer enhancing the adhesion between said filler material and said substrate,

(d) elevating the temperature of said substrate and said filler material to the melting point of said filler material,

(e) maintaining said substrate and said filler material at said melting point temperature of said filler material until said filler material spreads to a glass-like smoothness, and

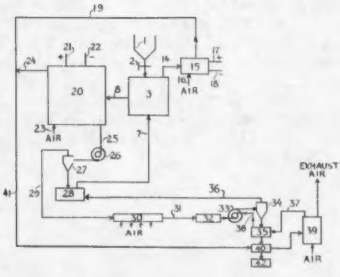
(f) cooling of said structure.

4,254,190

ELECTROCHEMICAL POWER GENERATION APPARATUS AND METHODS

Solomon Zaromb, 171 Clifton Ave., Newark, N.J. 07104

Continuation-in-part of Ser. No. 20,967, Mar. 16, 1979, and a continuation-in-part of Ser. No. 917,406, Jun. 20, 1978, Pat. No. 4,198,475, and a continuation-in-part of Ser. No. 704,452, Jul. 12, 1976, abandoned, and a continuation-in-part of Ser. No. 938,395, Aug. 31, 1978, Pat. No. 4,207,382, said Ser. No. 20,967, is a division of Ser. No. 843,155, Oct. 17, 1977, Pat. No. 4,150,197, said Ser. No. 938,395, is a continuation of Ser. No. 813,483, Jul. 7, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,185
Int. Cl.[3] H01M 8/06
U.S. Cl. 429—15 **23 Claims**



1. Apparatus for generating heat and electrical energy from the consumption of a variety of aluminum products which comprises:

(a) a reaction chamber containing an aqueous electrolyte solution and adapted for introduction therein of aluminum pieces of various shapes and sizes up to a certain maximum predetermined size and for effecting a chemical reaction between said aqueous electrolyte and said aluminum pieces yielding aluminum hydroxide and an intermediate reactant;

(b) means for feeding said aluminum pieces into said reaction chamber in small quantities upon demand;

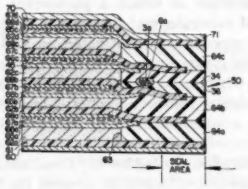
(c) means for removing the heat generated in said chamber as a result of said reaction;
(d) means for removing said aluminum hydroxide reaction product; and
(e) means for oxidizing said intermediate reactant in an electrochemical cell, thereby generating electrical energy.

4,254,191

METHOD FOR MANUFACTURING BATTERY VENTS AND VENTED BATTERIES

Alfredo G. Kniazzeh, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 761,653, Jan. 24, 1977, abandoned. This application Nov. 18, 1977, Ser. No. 852,920
Int. Cl.³ H01M *6/12, 6/00;* B32B *31/00*
U.S. Cl. 429—162 **13 Claims**



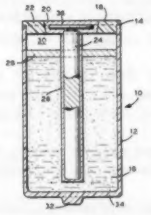
1. A flat laminar battery comprising a contiguous stack of laminar cells electrically connected in series by conductive plastic intercell connectors and terminated by conductive plastic current collectors; said battery further comprising thermoplastic frames of liquid impermeable, gas permeable material, said frames being formed with central openings to receive active components of said cells; said frames being located between and separating said intercell connectors and said current collectors; said frames, said intercell connectors and said current collectors being sealed together at their outer peripheries only to provide a liquid impervious enclosure for said cells; and at least one elongated strip of paper embedded in one of said frames and entirely surrounded along its length by liquid impermeable, gas permeable material, said strip extending along a region within said sealed outer periphery through said sealed outer periphery to at least one end exposed to the atmosphere.

4,254,192

PRIMARY GALVANIC CELL

Philip Bernstein, Glen Ridge, N.J.; James P. Coffey, and James W. Wilson, both of Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,793
Int. Cl.³ H01M *2/30*
U.S. Cl. 429—181 **6 Claims**



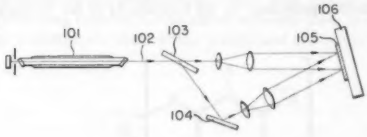
1. An improved galvanic cell having internal components completely disposed within the cell and not extending thereout so as to effectively reduce electrolyte leakage paths to the exterior of the cell, the cell including a container having an open end and a closed end, and an electrode, separator and an electrolyte disposed within the container, the improvement which comprises an integral triple purpose insert molded end cap sealing the open end of the container, the container made from an electrically conductive polymer, the end cap including an outer insulating ring in sealing registry with the container, an inner conducting plate circumscribed by the ring and flush therewith, the electrode insert molded into the plate and extending into the electrolyte, the electrode having anchoring means embedded into the plate, the plate completely enveloping the anchoring means so that the electrode does not indirectly extend without the container, and an integrally molded nipple outwardly extending from the closed end, the nipple independent of the electrode.

4,254,193

HOLOGRAM AND METHOD OF PRODUCTION THEREOF FROM POLYSACCHARIDE RECORDING LAYER

Koujiro Yokono, Kawasaki, and Katsuhiko Nishide, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 819,594, Jul. 27, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,535
Claims priority, application Japan, Jul. 27, 1976, 51/89489
Int. Cl.³ G03C *5/04*
U.S. Cl. 430—1 **20 Claims**



1. A method of producing a hologram which comprises the steps of:
exposing a recording carrier to an interference pattern of radiant rays, said recording carrier being composed mainly of polysaccharide made active to radiation by the co-existence of a compound containing a metal ion;
subjecting the exposed carrier to a swelling treatment with a first solvent and
subjecting the swollen carrier to a shrinking treatment with a second solvent
whereby the swelling and shrinking treatments cause internal tension and fractures between the exposed and unexposed portions of the recording carrier, thereby enhancing the diffraction efficiency.

4,254,194

SCREEN PRINTING STENCILS USING NOVEL COMPOUNDS AND COMPOSITIONS

Richard E. Merrill, Wakefield, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 970,146, Dec. 18, 1978, Pat. No. 4,209,582, which is a continuation-in-part of Ser. No. 770,272, Feb. 22, 1977, abandoned, Ser. No. 844,633, Oct. 25, 1977, abandoned, and Ser. No. 958,712, Nov. 8, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,617
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—11 **7 Claims**

1. A screen printing stencil having indicia defined thereon in the form of a film attached to the printing screen of said stencil, said film comprising a radiation cross-linked block copolymer formed of blocks of a copolyacrylate and a polyurethane, said

copolyacrylate comprising a copolymer of a hydroxy-containing acrylate and a second acrylate component comprising one

or more esters of non-hydroxy containing acrylic acid or methacrylic acid or a mixture thereof.

4,254,195

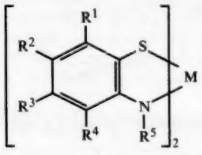
STABILIZATION OF ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST THE ACTION OF LIGHT

Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

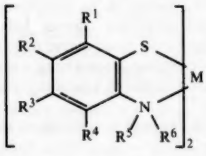
Filed Apr. 11, 1979, Ser. No. 29,086
Claims priority, application Japan, Apr. 14, 1978, 53-43866
Int. Cl.³ G03C *1/40, 1/84, 7/00, 1/10*
U.S. Cl. 430—17 **14 Claims**

6. A color photographic material comprising at least one layer containing a photographic dye image, said dye of said dye image having an absorption maximum in the wavelength range between about 300 nm and about 800 nm, wherein said layer or an adjacent layer thereto contains at least one complex compound represented by the formula (I) or the formula (II)

(I)



(II)



wherein N is a metal selected from the group consisting of Cu, Co, Ni, Pd and Pt; R^1, R^2, R^3 and R^4 each represent a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, a cycloalkyl group, or a heterocyclic group attached to the carbon atom of the benzene ring directly or through a divalent connecting group; or, R^1 and R^2, R^2 and R^3, or R^3 and R^4 can be combined to represent non-metallic atoms necessary to complete a 6-membered ring; and R^5 and R^6, which may be the same or different, each represent a hydrogen atom, an alkyl group, an aryl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyl group or an arylsulfonyl group, stabilizing said dye to the action of light.

4,254,196

METHOD OF PREPARING LITHOPLATES AND PLATE

Douglas A. Seeley, High Bridge, and Victor M. Kamhi, Middlesex, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 18, 1979, Ser. No. 86,081
Int. Cl.³ G03G *13/26, 13/32*
U.S. Cl. 430—17 **8 Claims**

1. A press-ready electrophotographic lithographic printing plate comprising a support with a toner-free thin layer comprising a monomeric organic photoconductive insulating material adherent thereupon in imagewise configuration.

4,254,197

PROCESS OF FORMING PHOTORESIST LAYER ON A GLASS SUBSTRATE

Kiyoshi Miura; Naomitsu Watanabe, and Yoshifumi Tomita, all of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 496,854, Aug. 12, 1974, abandoned. This application Dec. 18, 1978, Ser. No. 970,363
Claims priority, application Japan, Oct. 24, 1973, 48-119006
Int. Cl.³ G03C *1/74, 1/92, 1/71*
U.S. Cl. 430—28 **7 Claims**

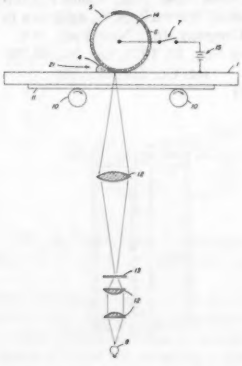
1. In a process for forming a photosensitive photoresist layer on a glass substrate in which a photoresist composition is coated on said substrate, said substrate is rotated so that said photoresist composition is distributed on said substrate uniformly and said composition is thereafter allowed to dry, the improvement wherein said photoresist composition comprises an aqueous solution containing water, a bisazide photo-crosslinking agent, a water-soluble polymeric substance capable of being photo-crosslinked by said bisazide photo-crosslinking agent, and a dihydric alcohol having a molecular weight of 60 to 110 in an amount sufficient to increase the fluidity of said composition and retard the drying rate of water from said composition so that the photoresist layer formed by coating said composition onto a substrate and drying has a uniform film thickness; said composition containing 5 to 300 parts by weight of said alcohol per 100 parts by weight of said water-soluble polymeric substance.

4,254,198

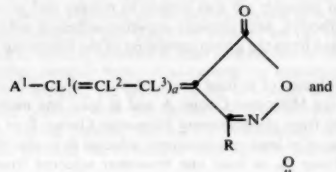
ELECTROPHOTOSENSITIVE MATERIALS FOR MIGRATION IMAGING PROCESSES

Frank G. Webster, Rochester, and Michael T. Regan, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

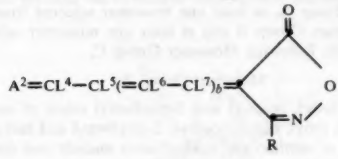
Division of Ser. No. 921,388, Jul. 3, 1978, Pat. No. 4,166,740, which is a continuation-in-part of Ser. No. 818,689, Jul. 25, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 29,093
Int. Cl.³ G03G *5/06, 17/04*
U.S. Cl. 430—37 **3 Claims**



1. An electrophoretic migration imaging dispersion comprising an electrically insulating carrier, a charge control agent and an electrically photosensitive colorant material having the formula



I.



II.

wherein

a and b represent zero, one or two;

L^1 through L^7, which may be the same or different represent hydrogen, alkyl, aralkyl, aryl or dialkylaminoarylvinyl; or any two of L^1, L^2, and L^3 or any two of L^4, L^5, L^6 and L^7 may, together with the atoms to which they are attached, represent the elements needed to complete a carbocyclic ring;

R represents alkyl, aryl, nitroaryl, or hydrogen;

A^1 represents an aryl, thiophene, benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, 3H-indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, 1,2,3,4-tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, 1,2-dihydro-4H-pyrrolo[3,2,1-ij]quinoline; 1,2,5,6-tetrahydro-4H-pyrrolo[3,2,1-ij]quinoline, 1H,5H-benzo[ij]quinolizine; 2,3-dihydro-1H,5H-benzo[ij]quinolizine; 2,3-dihydro-1H,5H-benzo[ij]quinolizine; 2,3,6,7-tetrahydro-1H,5H-benzo[ij]-quinolizine; 10,11-dihydro-9H-benzo[a]xanthen-8-yl; 6,7-dihydro-5H-benzo[b]pyran-7-yl or a heterocyclic nucleus of the type described for A^2;

A^2 represents a N-alkyl or N-haloalkyl substituted nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, thianaphtheno-[7',6',4,5]-thiazole, oxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine, 4-pyridine, acridine, benzoxazole, imidazoquinoxaline, imidazoquinoline, and thiazoloquinoline;

and A^1 and A^2 may be further substituted with one or more moieties selected from the group consisting of a heterocyclic secondary amino, alkoxy, amino, arylamino, dialkylamino, diarylamino, alkyl, aryl, nitro, haloaryl, halogen and hydroxy.

4,254,199

ELECTROPHOTOGRAPHIC IMAGING METHOD HAVING A DOUBLE CHARGING SEQUENCE

Simpei Tutihasi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 881,262, Feb. 24, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,776

Int. Cl.³ G03G *5/10, 5/14*

U.S. Cl. 430—58 **5 Claims**

1. An electrophotographic imaging method comprising:

(a) providing a photoreceptor comprising in the stated order

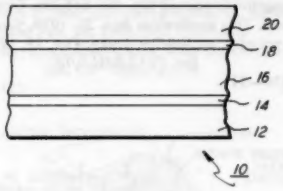
(i) a substrate;

(ii) a layer of a charge carrier injecting material capable of injecting one species of charge carrier into the transport layer described in (iii) below in the presence of an electrical field and in the absence of illumination;

(iii) a layer of a charge carrier transport material capable of transporting at least one species of charge carrier and injecting one species of charge carrier into the layer of charge carrier generating material described in (iv) below;

(iv) a layer of charge carrier generating material which is capable of injecting photogenerated charge carriers of one species into said charge carrier transport material, subject to the provision that the charge carriers travel across the interface between the transport and generating layer in both directions; and

(v) a layer of electrically insulating material;



(b) charging said photoreceptor with electrostatic charges of a first polarity;

(c) charging said photoreceptor with electrostatic charges opposite in polarity to said first polarity in order to substantially neutralize the charges residing on the surface of said photoreceptor; and

(d) exposing said photoreceptor to an imagewise pattern of electromagnetic radiation to which said charge carrier generating material is responsive whereby there is formed an electrostatic latent image within said photoreceptor.

4,254,200

ELECTROPHOTOGRAPHIC ELEMENT WITH BISMUTH OXIDE COMPOUND

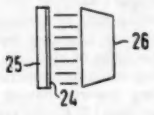
Helmut Thomann, Munich, and Christa Grabmaier, Kempfenhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Division of Ser. No. 837,197, Sep. 28, 1977. This application Mar. 2, 1979, Ser. No. 16,830

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644168

Int. Cl.³ G03G *5/082;* **B05D** *5/12;* **C01G** *29/00*

U.S. Cl. 430—84 **7 Claims**



1. An X-ray and γ-ray sensitive layer positioned on a conductive carrier member for use in a device producing electrostatic copies of an electrically charged image, said X-ray and γ-ray sensitive layer comprising a polycrystalline bismuth oxide compound having the formula:

$$Bi_{10-14}X_1O_n$$

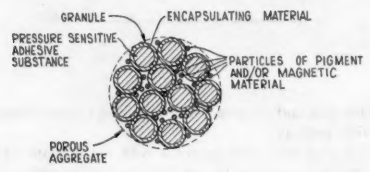
wherein X is at least one element selected from the group consisting of Al, Ga, Ge, Si and Ti and n is a numeral substantially equal to the stoichiometric amount of oxygen within the compound.

4,254,201

PRESSURE SENSITIVE ADHESIVE TONER OF CLUSTERED ENCAPSULATED POROUS PARTICLES FOR USE IN ELECTROSTATIC PHOTOGRAPHY

Yuji Sawai; Hisayuki Ushiyama, both of Tokyo, Japan; Tsuiki, deceased Harunobu, late of Tokyo, Japan; by Noriko Tsuiki, a legal representative, Chigasaki, Japan; Tomohiro Tsuiki, legal representative, Chigasaki, Japan; Manami Tsuiki, legal representive, Chigasaki, Japan; Tadashi Fujii, Tokyo, Japan; Eiichi Akutsu, Tokyo, Japan, and Itsuo Ikeda, Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 841,398, Oct. 12, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,194
Claims priority, application Japan, Oct. 15, 1976, 51-123573
Int. Cl.[3] G03G *9/08*
U.S. Cl. 430—111 **11 Claims**



1. A pressure-sensitive adhesive toner for use in electrostatic photography consisting essentially of porous particles having a mean particle size of about 5 to 30 microns, each of said porous particles consisting essentially of a cluster of a plurality of granules wherein each of said granules has a core of pressure-sensitive adhesive substance encapsulated by a thin coating film of encapsulating material, said pressure-sensitive adhesive substance being solid at room temperature, having a modulus of elasticity of less than 10^{10} dyne/cm^2 and a blocking-initiating temperature of lower than 50° C., said encapsulating material having a blocking-initiating temperature of higher than 50° C., said granules being adhered together to form said porous particle, said granules also containing a material selected from the group consisting of inorganic pigment particles, organic pigment particles, magnetic particles and mixture thereof, said toner having been prepared by spray-drying an aqueous dispersion of said granules containing said material, whereby said toner can be fixed by mechanically pressing and thereby breaking said porous particles.

11. A pressure-sensitive adhesive toner for use in electrostatic photography consisting essentially of approximately spherical porous particles having a rough surface, a mean particle size of about 5 to 30 microns, a porosity of about 5 to 50% and a specific gravity of about 0.9 to 2.9, each of said porous particles consisting essentially of a cluster of a multiplicity of individual granules wherein each of said granules has a core of pressure-sensitive adhesive substance encapsulated by a thin frangible coating film of encapsulating material, said pressure-sensitive adhesive substance being solid at room temperature, having a modules of elasticity of less than 10^{10} dyne/cm^2 and a blocking-initiating temperature of lower than 50° C., said encapsulating material having a blocking-initiating temperature of higher than 50° C., the surfaces of said granules being adhered together at the locations where they contact each other with spaces being formed where said granules are not in contact with each other whereby said porous particle is unitary and shape-retaining but is crushable when a fixing pressure is applied thereon, said porous particle having a material selected from the group consisting of inorganic pigment particles, organic pigment particles, magnetic particles and mixture thereof randomly dispersed in said spaces and adhered to the encapsulating films of said granules, the ratio of said pressure-sensitive adhesive substance to said material being in the range of 1/20 to 20/1 parts by weight, said toner having been prepared by spray-drying an aqueous dispersion of said granules containing said material, whereby said toner can be fixed by mechanically pressing and thereby breaking said porous particles into separate granules and the encapsulating films of said granules are also broken to release said pressure-sensitive adhesive, said pressure-sensitive adhesive substance being selected from the group consisting of the following (1) to (7),

(1) a copolymer of at least one monomer selected from the following Monomer Group A and at least one monomer selected from the following Monomer Group B or a copolymer of at least one monomer selected from the Monomer Group A, at least one monomer selected from the Monomer Group B and at least one monomer selected from the following Monomer Group C,

Monomer Group A:

ethyl, butyl, isoamyl and 2-ethylhexyl esters of acrylic acid, ethyl, butyl, isoamyl, 2-ethylhexyl and lauryl esters of methacrylic acid; dioctyl maleate and dioctyl fumarate

Monomer Group B:

methyl acrylate, methyl methacrylate, acrylonitrile, styrene, vinyl acetate and vinyl propionate

Monomer Group C:

arcylic acid, methacrylic acid, hydroxy ethyl methacrylate, hydroxy propyl methacrylate, methylol acrylamide, acrylamide, dimethylaminomethyl methacrylate, diethylaminoethyl methacrylate, glycidyl methacrylate and itaconic acid

(2) isobutylene rubber, polybutene, butadiene rubber, nitrile rubber, natural rubber and chlorinated rubber, and copolymers and graft copolymers of said rubbers and acrylic monomers

(3) rosin, dammar, copal, hydrogenated rosin, rosin ester, indene resin, cumarone resin, polyolefinic resin, polyterpene and alkyd resin

(4) dioctyl phthalate, dibutyl phthalate and chlorinated paraffin

(5) stearic acid, palmitic acid, myristic acid, lauric acid, aluminum stearate, potassium stearate, zinc palmitate, hydrogenated caster oil, cocao butter, methylhydroxy stearate, glycerol monohydroxy stearate, Japan wax, beeswax, carnauba wax, microcrystalline wax, paraffin wax, low molecular weight polyethylene and low molecular weight ethylene-vinyl acetate copolymers

(6) epoxy modified phenol resin, natural resin modified phenol resin, amino resin, silicone resin, polyurethane, urea resin and polyester

(7) asphalt and gilsonite, and said encapsulating material being at least one material selected from the group consisting of gum arabic, gelatin, albumin, sodium alginate, carboxymethyl cellulose, hydroxyethyl cellulose, ethylene-anhydrous sodium maleate copolymer, vinyl methyl ether-maleic anhydride copolymer, vinyl methyl ether-maleic anhydride ester copolymer, styrene-acrylic acid-butyl methacrylate copolymer, urea-formaldehyde polycondensate, polyester and polyamide.

4,254,202

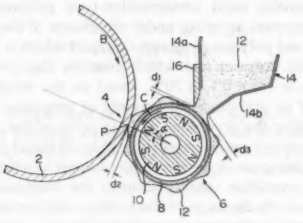
ELECTROSTATIC COPYING PROCESS

Shoji Matsumoto, Neyagawa; Toshikazu Matsui, Kishiwada; Toshimitsu Ikeda, Higashiosaka; Nobuhiko Kozuka, Suita; Hitoshi Nishihama, Uji, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Filed Apr. 11, 1978, Ser. No. 895,465
Claims priority, application Japan, Apr. 19, 1977, 52-44162
Int. Cl.[3] G03G *13/09*
U.S. Cl. 430—120 **8 Claims**

1. An electrostatic copying process which comprises the step of forming an electrostatic latent image on the surface of an electrostatic latent image-bearing member and the step of

developing the electrostatic latent image by magnetically holding a mono-co... onent developer composed of a conductive or semiconductive fine magnetic powder on the surface of a developer-holding member at least said surface of the developer-holding member being of an electrically insulating material, and then bringing the surface of the developer-holding member into contact with the surface of the electrostatic latent image-bearing member having the electrostatic latent image thereon through the developer held thereon thereby to apply



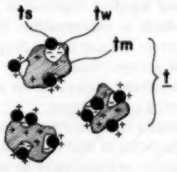
the developer to the electrostatic latent image and develop it, the surface of the developer-holding member being contacted successively with the surface of the electrostatic latent image-bearing member through the developer held on the developer-holding member by moving sad surfaces in the same direction at a moving speed V_1 of the surface of the developer-holding member and a moving speed V_2 of the surface of the electrostatic latent imagebearing member which differ from each other and are in relationship 20 m/min. $\geqq |V_1 - V_2| > 0$ m/min.

4,254,203

DRY PROCESS DEVELOPING METHOD EMPLOYING MAGNETIC TONER

Tateki Oka, and Susumu Tanaka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Jul. 17, 1978, Ser. No. 925,699
Claims priority, application Japan, Jul. 27, 1977, 52/906720
Int. Cl.³ G03G *9/14, 13/09*
U.S. Cl. 430—120 **23 Claims**



1. A dry process method for developing an electrostatic latent image which comprises:

(a) preparing main particles comprising a highly electrically insulating resin and magnetizable fine particles, part of said magnetizable fine particles being exposed through the surfaces of said main particles;

(b) independently of step (a), preparing subordinate particles having a diameter smaller than that of said main particles and comprising a resin having frictional charging characteristics approximately equal to that of the resin constituting said main particles,

(c) mixing said main and subordinate particles to form a developing material wherein said subordinate particles are adhered to the magnetizable particles exposed through the surface of said primary particles,

(d) triboelectrically charging said highly electrically insulating resin in said particles to a polarity opposite that of an electrostatic latent image to be developed by frictional contact between said magnetizable particles exposed through the surface of said main particles and said highly electrically insulating resin and

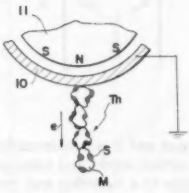
(e) applying said developing material onto an electrical potential pattern formed on a recording medium to develop said electrical potential pattern into visible image.

4,254,204

MAGNETIC BRUSH ELECTROGRAPHIC DEVELOPING METHOD

Hitoshi Kato; Koji Nagai, and Hiromi Kameda, all of Itami, Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Jan. 24, 1979, Ser. No. 6,451
Claims priority, application Japan, Feb. 24, 1978, 53-21386
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—122 **18 Claims**



1. A magnetic brush electrophotographic developing method for developing an electrostatic latent image which comprises:

frictionally contacting a magnetic toner which comprises core particles having a low resistivity and containing a resin and a finely divided magnetic material, and secondary particles thermally adhered to a part of the outer surface of each core particle and consisting predominantly of an insulating resin:

said secondary particles being triboelectrically charged to a polarity opposite the polarity of the core particles and the latent image when said secondary particles are brought into frictional contact with said core particles,

the part of the outer surface of said core particles exposed through the secondary particles being sufficient to permit said core particles to substantially contact each other under the influence of a magnetic field, thereby forming a magnetic brush,

said part of said outer surface of said core particles exposed through said secondary particles also being sufficient to permit the core particles to triboelectrically contact the secondary particles which are thermally adhered to the other core particles,

said core particles having a low resistivity so as to rapidly dissipate triboelectrical charges;

said secondary particles having a high resistivity so as to retain the triboelectrical charges and

developing a latent electrostatic image bearing surface on a support by contacting said surface with said magnetic brush.

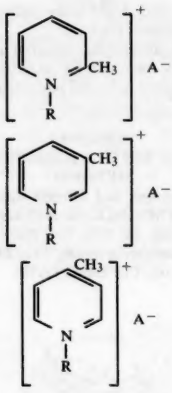
4,254,205

POSITIVE TONERS CONTAINING ALKYL PICOLINIUM COMPOUNDS AS CHARGE CONTROL AGENTS

Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 19,692, Mar. 12, 1979. This application Apr. 14, 1980, Ser. No. 139,927
Int. Cl.³ G03G *9/16, 13/08*
U.S. Cl. 430—122 **8 Claims**

1. A method of imaging comprising forming an electrostatic latent image on a photoreceptor by contacting the image with a positively dry developer comprising a resin material, a colorant, a carrier, and an alkyl picolinium compound selected from those of the formula:



wherein A is an anion and R is a hydrocarbon radical containing from 8 to 22 carbon atoms and subsequently transferring the developed image to a substrate and permanently affixing the image thereto.

4,254,206

PROCESS FOR MAGNETICALLY TRANSFERRING A POWDER IMAGE

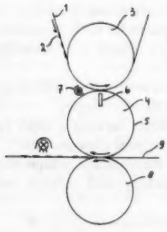
Willem T. Draai, Helden-Panningen, and Josephus W. Rongen, Venlo, both of Netherlands, assignors to Océ-van der Grinten N.V., Venlo, Netherlands

Continuation-in-part of Ser. No. 922,374, Jul. 6, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,203

Claims priority, application Netherlands, Jul. 7, 1977, 7707546

Int. Cl.[3] **B05D** *1/04, 1/06, 5/00*

U.S. Cl. 430—126 **15 Claims**



1. In a process for transferring a powder image formed of permanently magnetizable developing powder, in which process the powder image is magnetically transferred to a first receiving support and subsequently is transferred from the first receiving support directly or indirectly to a final receiving support, the improvement comprising that the first receiving support is a magnetizable support that possesses a substantially uniform magnetic permeability over its whole surface, the magnetizable material of which is soft magnetic material having a relative magnetic permeability of at least 2, and the powder image is transferred to the first receiving support by magnetizing the powder image and bringing it into contact with the first receiving support.

4,254,207

PROCESS FOR PRODUCING SPHERICAL PARTICLES OR CRYSTALLINE POLYMERS

Leo M. Landoll, Wilmington, and Walter S. Ropp, Hockessin, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 26, 1979, Ser. No. 107,471

Int. Cl.[3] **C08L** *67/06, 77/00;* **G03G** *9/00*

U.S. Cl. 430—137 **12 Claims**

1. A process for producing spherical small particles of crystalline, normally solid condensation-type polymers which process comprises agitating under conditions of shear a fluid mixture of said polymer in an aprotic liquid which is a non-solvent for said polymer and which contains dissolved or dispersed therein from 0.1 to 20%, based on the weight of said polymer, of an acid-modified polymer of propylene at a temperature above the crystalline melting point of the condensation-type polymer until a dispersion of small liquid particles is formed, agitating the dispersion while cooling to a temperature below the crystalline melting point of the condensation-type polymer until the liquid particles solidify, and recovering the resulting particles from the aprotic liquid.

4,254,208

PHOTOGRAPHIC MATERIAL

Sumitaka Tatsuta; Masuhiko Hirose, and Hiroshi Amari, all of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 580,273, May 23, 1975, abandoned. This application Feb. 14, 1977, Ser. No. 768,456

Claims priority, application Japan, May 23, 1974, 49-58272

Int. Cl.[3] **G03C** *1/48, 1/78*

U.S. Cl. 430—215 **22 Claims**

1. A process for producing a photographic material having good adhesion between a support and a hydrophilic colloid photographic layer which comprises the steps of:

(1) liquifying a material which is solid at ordinary temperatures by heating in the absence of a liquid solvent;

(2) dispersing said liquified material in a solution of an organic resin which is incompatible therewith to form a dispersion wherein the size of the droplets of said liquified particles is not greater than 1μ;

(3) coating the resulting dispersion on at least one side of a support to form a coated layer;

(4) drying the coated layer to form a transparent layer containing solid particles of said material dispersed therein in a macroscopically uniform state in an order larger than the size of a single molecule and forming a different phase from that of the organic resin; and then,

(5) coating a hydrophilic colloid photographic layer on said coated layer.

4,254,209

DRY PLANOGRAPHIC PLATE WITH LIGHT SENSITIVE SILICONE COMPOSITION

Kohki Abe; Hiroyuki Tsuchiya, and Masayoshi Mizuno, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 841,118, Oct. 11, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,641

Claims priority, application Japan, Oct. 22, 1976, 51-127052

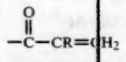
Int. Cl.[3] **G03F** *7/02;* **G03C** *1/76*

U.S. Cl. 430—272 **11 Claims**

1. An original plate for producing dry planographic printing plates comprising:

(a) a support, and over and in contact with the support,

(b) a light-sensitive adhesive layer made of a photopolymerizable composition comprising one or more photopolymerizable ethylenically unsaturated compounds and one or more photopolymerization initiators, at least 30% by weight of said one or more polymerizable ethylenically unsaturated compounds being one or more photopolymerizable ethylenically unsaturated polymeric compounds having a group of the formula:



wherein R is hydrogen or methyl, at a side chain, and being obtained by reacting a polymeric compound having free carboxyl groups at side chains with glycidyl methacrylate and/or glycidyl acrylate; and overlying said light-sensitive adhesive layer,

(c) a light-sensitive ink-repellent layer made of a silicone composition consisting essentially of about 20 to 95% by weight of one or more silicones, about 5 to 80% by weight of one or more photopolymerizable ethylenically unsaturated compounds and about 0.01 to 10% by weight of one or more photopolymerization initiators; and wherein non-exposed portions of both the light-sensitive adhesive layer and the light-sensitive ink-repellent layer are removable by a solvent after image-wise exposure to actinic light.

4,254,210

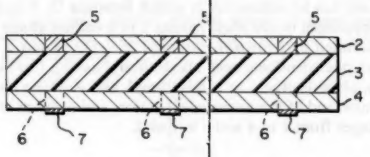
COMBINED SILVER HALIDE TONABLE PHOTOPOLYMER ELEMENT TO INCREASE DENSITY

Albert L. Van Stappen, Rumson, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 743,316, Nov. 19, 1976, abandoned. This application May 11, 1978, Ser. No. 904,911

Int. Cl.[2] G03C 1/76, 1/52, 5/00, 5/26

U.S. Cl. 430—285 **13 Claims**



1. An image-forming composite film comprising:

(a) a support,

(b) a layer of radiation-sensitive gelatino/silver halide emulsion on one side of said support, said emulsion having been brought to its optimum sensitivity with gold and sulfur, and

(c) a positive-working photopolymerizable image-forming layer on the opposite side of said support and adapted to be exposed by light directed through the silver halide layer after the latter has been exposed and developed to form a blackened silver image; the photopolymerizable layer having the property of being tacky in the un-polymerized condition but becoming nontacky when polymerized.

4,254,211

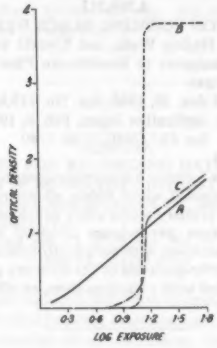
PRODUCTION OF TRANSFER MATERIAL

Simon L. Scrutton, London; William F. G. Marwick, Sittingbourne, and David R. Wilson, Tadworth, all of England, assignors to Letraset USA Inc., Bergenfield, N.J.

Continuation-in-part of Ser. No. 794,988, May 9, 1977, abandoned, and a continuation-in-part of Ser. No. 795,420, May 9, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,145

Int. Cl.[3] C03C 5/00

U.S. Cl. 430—325 **15 Claims**



1. A method of preparing a transfer material which comprises:

applying to a transparent or translucent substrate a coating layer which comprises a photosensitized composition of a homopolymer or a copolymer of vinylacetate and polyvinyl alcohol or polyvinylpyrolidone which is insoluble but swellable in water and whose adhesion to the substrate increases on exposure to actinic radiation, the ratio of said acetate constituent to said alcohol or pyrrolidone constituent being sufficiently high to render said coating layer insoluble in water;

imagewise exposing the coating layer to said actinic radiation through said substrate to increase the adhesion of the coating layer to the substrate in the exposed areas; and

developing the imagewise exposed material with water to completely remove the unexposed areas of said coating layer and to retain on said substrate substantially the original thickness of said coating layer in the areas which have been exposed to said actinic radiation, and,

if necessary, treating the areas of the coating remaining on the substrate after said development to render them transferable from the substrate to a receiving surface.

4,254,212

PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIAL AND COLOR IMAGE-FORMING PROCESS

Morio Yagihara; Yukio Yokota; Akira Ogawa, all of Minamiashigara, and Hiroshi Sawaguchi, Odaware, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Aug. 29, 1979, Ser. No. 70,544

Claims priority, application Japan, Aug. 29, 1978, 53/105197

Int. Cl.[3] G03C 1/40

U.S. Cl. 430—381 **36 Claims**

1. A photographic silver halide light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing a cyan dye-forming colorless photographic coupler wherein the coupling position capable of reacting with the oxidized product of an aromatic primary

amine developing agent is substituted with at least one alkoxy group substituted with a sulfonyl group as a coupling-off group, said alkoxy group being represented by the formula (I):

$$-O-R-SO_2-R_1 \quad (I)$$

wherein R represents a saturated or unsaturated divalent aliphatic group having 1 to 4 carbon atoms which may be straight or branched chain and may be substituted provided that R is not substituted with an aryl group at the α-position; and R_1 represents an aliphatic group, an aromatic group.

4,254,213

PROCESS FOR FORMING BLACK DYE IMAGES

Kosaku Masuda; Hajime Wada, and Kiyoshi Yamashita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 115,809

Claims priority, application Japan, Feb. 6, 1979, 54/12555

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—381 **18 Claims**

1. A process for forming a due image comprising processing an image-wise exposed silver halide photographic emulsion with an aromatic primary amine color developing agent in the presence of bis-type pyrazolones obtained by reacting 3-acylamino-5-pyrazolones with para-hydroxybenzaldehydes, at least one of the ortho-positions of the hydroxy group of which has been substituted with a halogen atom, an alkyl, aryl, amino or amido group.

4,254,214

PHOTOGRAPHIC MATERIALS FOR NON-SILVER IMAGES AND PROCESS FOR FORMING NON-SILVER IMAGES

Keizi Takeda; Kenji Matsumoto, and Masayoshi Nagata, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 745,908, Nov. 29, 1976, abandoned. This application May 30, 1978, Ser. No. 910,936

Claims priority, application Japan, Nov. 27, 1975, 50-142077; Feb. 10, 1976, 51-13797

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—415 **22 Claims**

1. A process for forming images, which comprises

(1) exposing imagewise a photographic material comprising:
  (a) a support,
  (b) a layer containing a salt or complex of monovalent or divalent copper and a hydrophilic binder formed on the support, and
  (c) a silver halide layer formed on layer (b);
(2) developing the silver halide layer using a chemical developer solution for silver halide; and
(3) developing the layer (b) using an aqueous developing solution for layer (b) containing at least one reducing agent thereby to form a black non-silver image derived from layer (b) and containing copper at the site of the silver image formed in step (2).

4,254,215

PROCESS FOR THE PREVENTION OF DARKENING AND THE FORMATION OF A SEDIMENT IN PHOTOGRAPHIC DEVELOPER SOLUTIONS

Ekkehard Kramp; John Lenoir, and Max Marthaler, all of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

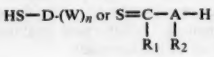
Filed Mar. 26, 1979, Ser. No. 24,287

Claims priority, application Switzerland, Mar. 31, 1978, 3478/78; Feb. 16, 1979, 1547/79

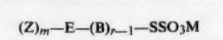
Int. Cl.² G03C *5/30, 5/38*

U.S. Cl. 430—419 **21 Claims**

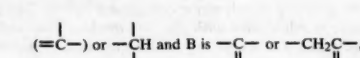
1. A process for the prevention of darkening and the formation of a sediment in photographic developer solutions which contain a compound which develops silver halide, a water-soluble silver halide solvent and organic sulfur compounds, which comprises adding to the developer solution, as organic sulfur compounds, a combination of (a) a compound of the formulae



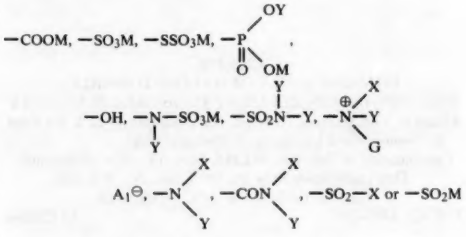
and (b) a Bunte salt of the formula



in which formulae A is a nitrogen atom, a carbon atom bonded via a double bond



R_2 is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted phenyl or a substituted or unsubstituted, saturated or unsaturated 5-membered or 6-membered heterocyclic radical containing nitrogen, oxygen and/or sulfur atoms and R_1 has the meaning defined for R_2 with the exception of hydrogen, or R_1 and R_2 together with the atoms to which they are bonded form a 4-membered, 5-membered or 6-membered heterocyclic ring, D and E are each a substituted or unsubstituted aliphatic, araliphatic, cycloaliphatic, aromatic or heterocyclic radical and W and Z are each a radical of the formulae



or a polyoxyethylene radical which has 2 to 20 oxyethylene units and can be sulfonated, in which formulae G, X and Y are each hydrogen or are alkyl having 1 to 6 carbon atoms which is substituted by hydroxyl, carboxyl or $-SO_3H$ and Y is also phenyl, phenylsulfonic acid, alkylsulfonyl having 1 to 5 carbon atoms, phenylsulfonyl or tolylsulfonyl, and $A_1^{\ominus}$ is a monovalent anion and M is a monovalent cation, and n and m are each an integer from 1 to 4 and r is 1 or 2.

4,254,216

COLOR PHOTOGRAPHIC MATERIAL

Takashi Uchida; Takashi Sasaki; Shoji Kikuchi, all of Hino; Katsuo Mogaki, Odawara; Masahiko Taguchi, Odawara, and Syun Takada, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

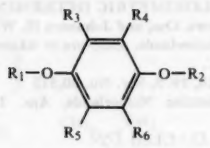
Filed Sep. 6, 1978, Ser. No. 939,968

Claims priority, application Japan, Sep. 12, 1977, 52-110363

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—551 **11 Claims**

1. A color photosensitive material comprising a support and a silver halide photosensitive layer containing a 5-pyrazolone coupler, which material contains a compound represented by the following formula (1):



Formula (I)

wherein R_1 and R_2 each represent an alkyl group, an alkenyl group, a cycloalkyl group, an aryl group or a hererocyclic ring; two of R_3, R_4, R_5 and R_6 represent an alkyl, alkenyl or alkoxy group of up to 32 carbon atoms and the other two represent hydrogen atoms when R_1 and R_2 both are an alkyl group, the sum of the carbon atoms of said alkyl group is not less than 3, and said compound does not substantially react with the oxidized form of a developer to form a coloring dye.

4,254,217

HARDENER-INCORPORATED GELATIN COMPOSITION

Minoru Ohashi, and Katsuaki Iwaosa, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

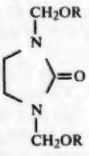
Filed Jun. 15, 1979, Ser. No. 49,049

Claims priority, application Japan, Jun. 19, 1978, 53-74004; Aug. 25, 1978, 53-103661

Int. Cl.[3] **G03C** *1/30;* **C09H** *7/00*

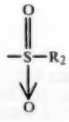
U.S. Cl. 430—623 **12 Claims**

1. A composition comprising gelatin and a hardener compound represented by the formula:



wherein R is a hydrogen atom, an alkyl group, a phenyl group, an acyl group represented by

(where R_1 is an alkyl, phenyl, alkenyl, alkoxy or amino group), a carbamoyl group, an alkoxy carbonyl group or a sulfonyl group represented by



(where R_2 is an alkyl or phenyl group).

4,254,218

DETECTING NEISSERIA VIA IMMOBILIZED ANTIBODY-ENZYME COMPLEX

Hugh C. McDonald; Gerald Odstrchel, both of Horseheads, and Milton M. Takeguchi, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,294

Int. Cl.[3] **C12Q** *1/66;* **C12N** *11/14*

U.S. Cl. 435—7 **18 Claims**

1. A method for detecting the presence of Neisseria bacteria in a fluid sample which comprises bringing immobilized antibody specific for the enzyme 1,2-propanediol dehydrogenase which is released from such bacteria upon lysis thereof, into contact with a lysed sample, isolating the immobilized antibody or resulting immobilized antibody-enzyme complex having substantial 1,2 propanediol dehydrogenase activity or mixture thereof, and then testing the isolated material for enzymatic activity.

12. A reagent system comprising an antibody which is immobilized on a support and is specific for propanediol dehydrogenase, wherein said antibody is capable of complexing with said enzyme resulting in a complex having sustantial 1,2 propanediol dehydrogenase activity, and substrate for said enzyme saturated on said support.

4,254,219

PROCESS FOR RECORDING DATA IN THE LEUCOCYTE MIGRATION INHIBITION ASSAY

W. Wardle Fullerton, King of Prussia, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 21, 1979, Ser. No. 77,690

Int. Cl.[3] **C12Q** *1/66*

U.S. Cl. 435—7 **6 Claims**

1. In an antigen-induced leucocyte migration assay wherein leucocytes are added to a hole in an agar medium, the improvement which comprises fixing and staining the leucocytes after formation of a precipitin band, and heating the system to permit removal of the agar medium.

4,254,220

COMPOSITION FOR THE KINETIC DETERMINATION OF GLUCOSE

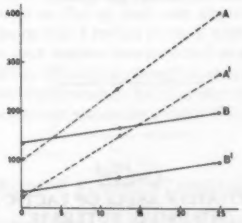
Franco Meiattini, Siena, Italy, assignor to Sclavo, S.p.A., Milan, Italy

Filed Oct. 5, 1979, Ser. No. 82,174

Claims priority, application Italy, Oct. 12, 1978, 28665 A/78

Int. Cl.[3] **C12Q** *1/54*

U.S. Cl. 435—14 **5 Claims**



1. A composition adapted for the kinetic determination of glucose, said composition comprising:

(a) glucose-oxidase and peroxidase enzymes;

(b) a buffer system;

(c) a compound containing in the molecule an aromatic ring with at least a phenolic —OH;

(d) a compound containing a group bonded to a 1-phenyl-5-pyrazolinone;

(e) a substance for the inhibition of the glucose oxidase enzyme, said substance being selected from the group consisting of nitrates, selenites, sulphites, thiocyanates, and semicarbazide.

4,254,221

METHOD OF BURNING LUMP-SIZED COMBUSTIBLE MATERIAL, AND AN ANNULAR SHAFT KILN FOR CARRYING OUT THIS METHOD

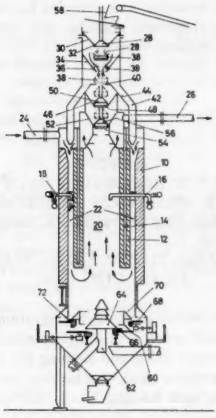
Karl Beckenbach, Eschenweg 2, 4005 Meerbusch, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 47,991

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826167

Int. Cl.³ F27D *7/00, 1/08*

U.S. Cl. 432—25 13 Claims



1. Method of burning crushed combustion material, such as limestone, dolomite, magnesite or a similar material, in an annular shaft kiln having generally concentric annular outer shaft and inner shaft, an exhaust gas system, a first line connected to the outer shaft and a second line connected to the inner shaft, and combustion gas sources connected to said outer and inner shafts, comprising the steps of charging said outer and said inner shafts with said material, and alternately supplying fresh air to said first line and combustion gases to said outer chamber and connecting said second line with the exhaust gas system and then supplying fresh air to said second line and combustion gas to said inner chamber and connecting said first line with the exhaust gas system.

4,254,222

SEMI-QUANTITATIVE ASSAY OF LACTIC ACID AND β-HYDROXY BUTYRATE

Oliver E. Owen, 1401 Spring Mill Rd., Gladwyne, Pa. 19035

Filed Jul. 19, 1978, Ser. No. 925,946

Int. Cl.³ C12Q *1/32*

U.S. Cl. 435—26 8 Claims

1. An assay mixture, for determining the concentration of beta-hydroxybutyrate in a biological fluid, such mixture comprising the following components in the approximate concentrations set forth:

1.1 m Molar tetrazolium salt;

0.4 m Molar electron carrier;

2.0 m Molar NAD; and

1 International Unit/ml beta-hydroxybutyrate dehydrogenase.

4,254,223

APPARATUS FOR COLORIMETRIC DETERMINATION

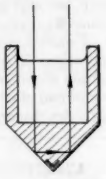
Antonius H. W. M. Schuurs, Oss, and Johannes H. W. Leuvering, Heesch, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Apr. 16, 1979, Ser. No. 30,515

Claims priority, application Netherlands, Apr. 18, 1978, 7804144

Int. Cl.³ C12M *1/24*

U.S. Cl. 435—296 8 Claims



1. An apparatus for use in performing colorimetric determinations of liquids comprising a reaction vessel for the liquid provided with a solid V-shaped bottom of transparent material having a refractive index of $n \geqq 1.4$, said bottom having a cone- or prism-shape with an apical angle from about 80° to about 100°, or the shape of a polyhedral pyramid whose opposing surfaces intersect at an angle between about 80° and about 100°.

3. An apparatus for use in performing colorimetric determinations of liquids comprising at least one reaction vessel for the liquids provided with a solid V-shaped bottom of transparent material having a refractive index of $n \geqq 1.4$, said bottom having a cone- or prism-shape with an apical angle from about 80° to about 100°, or the shape of a polyhedral pyramid whose opposing surfaces intersect at an angle between about 80° and about 100°, wherein said V-shaped bottom has an outside border of a material other than air and wherein the ratio of the refractive index of the outside border material to the refractive index of the transparent material is less than or equal to $\frac{1}{2}\sqrt{2}$.

4,254,224

FERMENTATION METHOD FOR PRODUCING ANTIBIOTIC A43F

Janet C. Onishi, Mountainside; Gerald L. Rowin, Kendall Park, and John E. Miller, Jr., Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

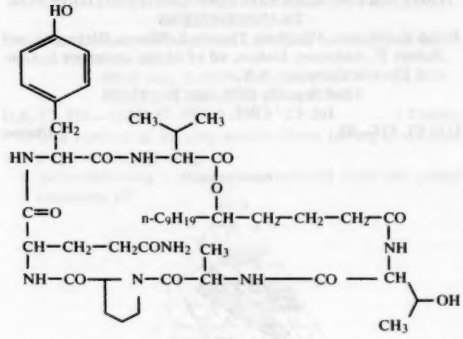
Division of Ser. No. 19,679, Mar. 12, 1979, Pat. No. 4,201,771.

This application Jul. 11, 1979, Ser. No. 56,488

Int. Cl.³ C12P *21/04*

U.S. Cl. 435—71 2 Claims

1. The method of producing antibiotic A43F having the following structural formula:



which comprises cultivating fungus species ATCC 20529 in a culture medium containing assimilable sources of carbohydrate, nitrogen and inorganic salts until a substantial amount of antibiotic activity is produced by said fungus in said culture medium and separating said antibiotic A43F from said culture medium.

4,254,225

NOVEL NEUTRAL GLUCOAMYLASE AND METHOD FOR ITS PRODUCTION

Masaki Tamura, Kamakura; Mizuho Shimizu, Hino, and Minoru Tago, Tokyo, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Jul. 9, 1979, Ser. No. 55,717

Claims priority, application Japan, Jul. 20, 1978, 53-87812

Int. Cl.³ C12P *19/20*; C12N *9/34*

U.S. Cl. 435—96 **11 Claims**

1. A glucoamylase enzyme preparation characterized in that it has a molecular weight of about 50,000 as determined by Sephadex G-150 column chromatography, an optimum glucoamylase activity in the range of about pH 6.0 to 6.5 at 60° C. and that it has maximum glucoamylase activity at about 65° C. as measured by a 10-minute reaction on a 2% maltodextrin solution at pH 6.0.

4,254,226

PROCESS FOR GROWING HUMAN EPIDERMAL CELLS IN TISSUE CULTURE

Magdalena G. Eisinger, Demarest, N.J., and John M. Hefton, New York, N.Y., assignors to Sloan Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 749, Jan. 2, 1979, abandoned. This application Sep. 13, 1979, Ser. No. 75,378

Int. Cl.³ C12N *5/00*

U.S. Cl. 435—240 **12 Claims**

1. Process for growing human epidermal cells in tissue culture which comprises:

(i) separating the epidermis in human skin from the dermis;

(ii) dissociating the epidermis into epidermal cells; and

(iii) growing the epidermal cells in a tissue culture medium having a pH of from about 5.6 to about 5.8.

4,254,227

PROCESSES FOR PRODUCING SYRUPS OF SYRUP SOLIDS CONTAINING FRUCTOSE-TERMINATED OLIGOSACCHARIDES

Shigetaka Okada, Ikoma; Sumio Kitahata, Ibaragi; Shigeharu Yoshikawa, Osaka, and Kentaro Miyake, Okayama, all of Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Mar. 8, 1979, Ser. No. 18,675

Claims priority, application Japan, Mar. 9, 1978, 53-26017

Int. Cl.³ C12P *19/18*

U.S. Cl. 435—97 **3 Claims**

1. A process for producing syrup or syrup solids containing fructose-terminated oligocaccharides, comprising subjecting a mixture solution of a liquefied starch, which acts as a donor of glucosidic residues, and one or more members selected from the group consisting of fructose, sucrose, isomerized sugar and invert sugar, which act as an acceptor for glucosidic residues, to the action of an immobilized cyclodextrin glucanotransferase (E.C. 2.4.1.19).

4,254,228

METHOD OF MAKING FOAMED RESINS WITH INTERNAL MOLD-RELEASE AGENTS

Helmut Kleimann; Wulf von Bonin, both of Leverkusen, and Heinz-Georg Schneider, Cummersbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 924,260, Jul. 13, 1978, Pat. No. 4,201,847, which is a continuation of Ser. No. 438,071, Jan. 30, 1974, abandoned. This application Jul. 18, 1979, Ser. No. 58,571

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1973, 2307589

Int. Cl.³ C08G *18/14, 18/36*

U.S. Cl. 521—128 **12 Claims**

1. In a process for the production of molded articles of polyurethane foam by foaming a reaction mixture in a closed mold, said reaction mixture comprising an organic polyisocyanate, an organic compound containing at least two hydrogen atoms reactive with said isocyanate, and a blowing agent, the improvement comprising adding to said reaction mixture, a mold releasing amount of the reaction product of

(a) an organic polyisocyanate and

(b) from 0.5 to 25% by weight based on the quantity of said component (a), of an active hydrogen containing fatty acid ester prepared by reacting an alcohol with an aliphatic, saturated or unsaturated fatty acid, said ester being characterized in that at least one aliphatic acid which contains more than 8 carbon atoms is built into the molecule, said ester further characterized as having an acid number of 0 to 100 and a hydroxyl number of 0 to 150 with at least one of said numbers being greater than 0, said ester having an average molecular weight of from 500 to 5000.

4,254,229

POLYURETHANE PLASTICS CONTAINING THIO GROUPS

Jürgen Schwindt; Gerhard Grögler, both of Leverkusen, and Paul Uhrhan, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 925,349, Jul. 17, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,976

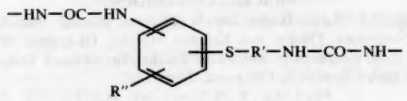
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734574

Int. Cl.³ C08G *18/14, 18/32*; C07C *149/40*

U.S. Cl. 521—163 **22 Claims**

1. Polyurethane plastic, which may be cellular, produced by the reaction of organic polyisocyanates with relatively high molecular weight polyhydroxyl compounds and, optionally, low molecular weight polyhydroxyl compounds; and di-

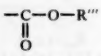
amines, said polyurethane plastic containing structural units corresponding to the general formula;



in which

R′ represents a straight or branched divalent aliphatic or cycloaliphatic radical containing from 2 to 20 carbon atoms and

R″ represents hydrogen, a straight or branched alkyl radical containing from 1 to 6 carbon atoms, an aryl radical containing from 6 to 15 carbon atoms, a cycloalkyl radical containing from 4 to 12 carbon atoms, halogen, $-NO_2$, —CN, —OR‴ or a radical



where

R‴ represents a straight or branched alkyl radical containing from 1 to 6 carbon atoms.

4,254,230

ACTINIC RADIATION-CURABLE FORMULATIONS OF UNSATURATED POLYETHEREST ER URETHANE

Dennis D. Howard, Girard, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 2,114, Jan. 9, 1979, Pat. No. 4,188,455, which is a continuation-in-part of Ser. No. 866,575, Jan. 3, 1978, Pat. No. 4,133,723. This application Dec. 10, 1979, Ser. No. 102,299

Int. Cl.[3] **C08F** *283/04;* **C08G** *18/04, 18/34,* **C08L** *3/28*

U.S. Cl. 525—28 **6 Claims**

1. Unsaturated addition-polymerizable urethane resins characterized by the presence of at least one ethylenically unsaturated group having the structure —CH=C>, said resins being further characterized by the presence in the backbone chain of said resins of the residue of at least one poly(alkylene oxide) polyol, said backbone chain being separated from said unsaturated group by at least two urethane groups, said resins consisting essentially of the reaction product of

(i) at least one organic isocyanate compound having at least two isocyanate groups;

(ii) at least one polyetherester polyol having at least two hydroxy groups and having the residue of at least one poly(alkylene oxide) polyol integrated into the backbone chain of such polyetherester polyol; and

(iii) at least one unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group;

there being present an excess of isocyanate compound with respect to the hydroxy groups of said polyetherester polyol;

said unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive hydrogen group being present in an amount sufficient to provide at least one molar equivalent of active hydrogen group with respect to isocyanate reactivity.

4,254,231

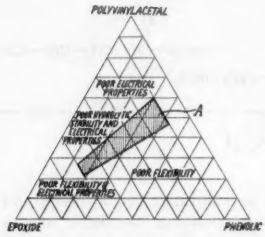
HIGH SOLIDS WIRE COATING COMPOSITIONS FOR TRANSFORMERS

Ralph G. Flowers, Pittsfield; Thomas L. Sherer, Richmond, and Robert P. Anderson, Dalton, all of Mass., assignors to General Electric Company, N.Y.

Filed Sep. 13, 1979, Ser. No. 75,076

Int. Cl.[3] **C08L** *63/00, 29/04*

U.S. Cl. 525—58 **5 Claims**



1. An improved wire coating composition consisting of a mixture of epoxy, polyvinylacetal and phenolic resins, wherein the improvement comprises:

from 10 to 60% epoxy resin, 22 to 60% polyvinylacetal resin, and 14 to 43% phenolic resin;

1 to 10% by weight of said epoxy resin of a curing agent selected from the group consisting of metal compounds and inner complex salts; and

from 0.20 to 2.20% by weight of said compositions of isocyanate groups as blocked isocyanates.

4,254,232

POLYGLUTARIMIDES

Donald S. Mueller, Newtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

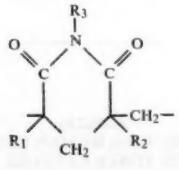
Filed Dec. 8, 1978, Ser. No. 967,663

Int. Cl.[3] **C08L** *51/02, 79/00*

U.S. Cl. 525—66 **8 Claims**

1. Composition comprising a blend of

(a) a thermoplastic polyglutarimide polymer containing units of the formula



wherein R_1, R_2, and R_3 independently represent hydrogen or C_1 to C_{20} unsubstituted or substituted alkyl, aryl, or mixtures thereof,

(b) a multiple stage polymer having a first stage polymerized from a predominantly butadiene or alkyl acrylate monomer system, and

(c) polycarbonate,

wherein the polycarbonate comprises about 12 to 25% by weight of said blend, the polymer containing imide units comprises about 20 to 80% by weight of said blend, and the notched Izod impact strength of the composition is greater than 3 ft. lbs./in. at 25° C.

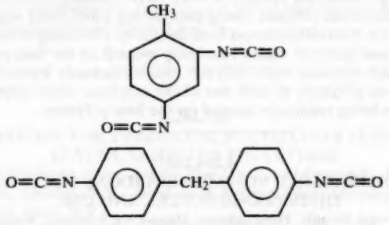
4,254,233
ACRYLIC FIBER AND THE METHOD FOR MAKING THE SAME

Ernest L. Lawton, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 1, 1979, Ser. No. 62,863
Int. Cl.³ C08F 8/30; C08L 79/00
U.S. Cl. 525—123 **7 Claims**

1. The method of forming acrylic fibers having good hot-wet properties, comprising:

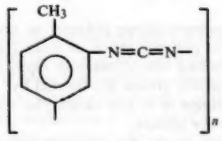
a. polycondensing a diisocyanate selected from the group consisting of:



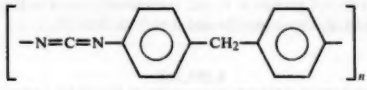
to form a polycarbodiimide in the presence of a spinning dope made up of dimethyl acetamide containing 10 to 30 weight percent of acrylic polymer dissolved therein, and

b. extruding the solvent containing the acrylic polymer and the polycarbodiimide to form a fiber, said fiber containing 5 to 40 weight percent of said polycarbodiimides in the form of discrete particles dispersed in the fiber.

4. An acrylic fiber containing 5 to 40 weight percent of a polycarbodiimide selected from the group consisting of



where n is 3 to 200;



where n is 3 to 200;

said polycarbodiimide being present in the fiber in the form of discrete particles dispersed throughout the fiber.

4,254,234
ULTRAVIOLET LIGHT CURABLE COATING COMPOSITIONS

Kiyoshi Goto, Kyobashi, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1978, Ser. No. 960,804
Claims priority, application Japan, Nov. 21, 1977, 52/138951
Int. Cl.³ C08J 3/28; C08F 261/02
U.S. Cl. 525—153 **23 Claims**

1. A process for the preparation of an esterified resin for ultraviolet light curable coating compositions, which comprises:

reacting an ethylenically unsaturated five-membered cyclic compound (A) represented by the following formula

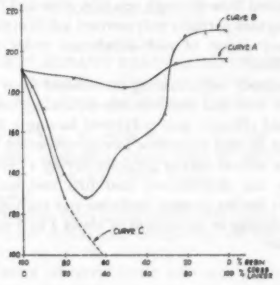
wherein R is an organic residue having 1–3 carbon atoms, and n is zero or an integer of 1–6, and the Diels-Alder's reaction products, with a compound (B) having both at least one polymerizable double bond and at least one hydroxyl group in the molecule, to obtain a hydroxyl group-containing resin, said compound (A) and (B) being reacted together in a molar ratio of from 30/70 to 95/5, and then

esterifying the thus-obtained resin with a carboxyl group-containing benzophenone derivative to obtain the esterified resin.

4,254,235
THERMOSETTING POWDER PAINTS

Edward T. Turpin, Elyria, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,220
Int. Cl.³ C08L 61/26
U.S. Cl. 525—162 **10 Claims**



7. In a process of producing a thermosetting powder paint composition containing a reactive matrix polymer having reactive groups of hydroxy, carboxy, or amide adapted to be cross-linked upon heat fusing the powder paint, the improvement consisting of the step:

providing in said powder paint composition a cross-linking polymer for cross-linking with the reactive groups of said matrix polymer, said cross-linking polymer produced by condensation polymerization of a glycoluril selected from tetra-alkoxy-methyl glycoluril or a tetra-methylol glycoluril to produce a polymeric glycoluril having a molecular weight between about 500 and 5000 and containing by weight between 4% and 40% alkoxy-methyl and/or methylol groups for cross-linking with the reactive groups on said matrix polymer, said polymeric glycol containing at least 3 polymeric units selected from a self-condensate glycoluril polymer containing at least 3 glycoluril units or a diol condensate polymer containing at least 2 glycoluril units condensed with diol.

4,254,236
PROCESS FOR THE CONTINUOUS MASS POLYMERIZATION OF POLYBLENDS HAVING A BIMODAL RUBBER PARTICLE SIZE

Raymond D. Burk, North Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 7, 1979, Ser. No. 18,390
Int. Cl.³ C08F 279/02
U.S. Cl. 525—316 **24 Claims**

1. A method for continuously mass polymerizing polyblends

having a dispersed diene rubber phase as rubber particles with a bimodal particle size distribution comprising:

A. continuously and simultaneously charging, as separate feed streams, first and second monomer-rubber solutions to a first flow-through, back-mixed, reaction zone, said monomer being selected from the group consisting of alkenyl aromatic and alkenyl nitrile/alkenyl aromatic mixtures, said second monomer-rubber solution having present dissolved polymer of said monomer,

B. continuously polymerizing said first and second solutions under steady state conditions, said monomer being polymerized to a conversion of about 15 to 50% forming a partially polymerized solution while,

C. continuously dispersing in said partially polymerized solution, said first monomer-rubber solutions as first rubber-particles having an average particle size of about 0.5 to 1.5 microns and said second monomer-rubber solution as second rubber particles having a particle size of about 2 to 10 microns, said second monomer-rubber solution having present sufficient polymer of said monomer to size said second rubber particles to an average particle size of about 2 to 10 microns,

D. continuously withdrawing said partially polymerized solution from said first reaction zone,

E. continuously charging said partially polymerized solution to a second flow-through reaction zone and further polymerizing said partially polymerized solution to about 20 to 95% conversion of said monomers under substantially linear flow,

F. continuously withdrawing an effluent from said second reaction zone and continuously separating said polyblend from said effluent, said polyblend having a matrix phase polymer of said monomer having dispersed therein said first and second rubber particles having a bimodal rubber particle size distribution, said first and second rubber particles having present occluded and grafted polymer of said monomer in an amount of about 1 to 5 parts per part of rubber.

4,254,237

PROCESS FOR PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMERS

Akinobu Shiga; Masahiro Kakugo; Hajime Sadatoshi; Kazuki Wakamatsu, and Hiroshi Yoshioka, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 16, 1979, Ser. No. 30,523
Claims priority, application Japan, Apr. 21, 1978, 53-48128
Int. Cl.[3] C08F *297/08*
U.S. Cl. 525—323 **5 Claims**

1. A process for producing a propylene-ethylene block copolymer by subjecting propylene and ethylene to three-step polymerization using a stereoregular polymerization catalyst, characterized in that the first-step polymerization is carried out by supplying propylene alone or a propylene/ethylene mixture so that the ethylene/propylene reaction ratio is 6/94 or less, thereby polymerizing 60 to 95% by weight of the total polymerization amount, the second-step polymerization is carried out by supplying a propylene/ethylene mixture so that the ethylene/propylene reaction ratio is 27/63 to 67/33, thereby polymerizing 1 to 20% by weight of the total polymerization amount, and the third-step polymerization is carried out by supplying a propylene/ethylene mixture so that the ethylene/propylene reaction ratio is 76/24 to 89/11, thereby polymerizing 4 to 35% by weight of the total polymerization amount, with the ethylene/propylene reaction ratio in the third step made larger than that in the second step.

4,254,238

HYDROCARBON/ETHYLENE OXIDE RANDOM GRAFT COPOLYMERS

Robert P. Foss, Hockessin, and Henning W. Jacobson, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 1, 1975, Ser. No. 636,793
Int. Cl.[3] C08F *8/08, 110/00*
U.S. Cl. 525—335 **9 Claims**

1. A random graft copolymer which comprises an essentially linear hydrocarbon base polymer having a number average molecular weight of 1000 to 500,000, said base polymer having grafted thereto, at intervals of 100 to 100,000 units of number average molecular weight, at least three hydroxyl-terminated ethylene oxide polymer chains each having a molecular weight of 100 to 5,000,000 selected from the group consisting of ethylene oxide polymer chains terminally located on the base polymer and ethylene oxide polymer chains randomly located on the base polymer, at least one of the ethylene oxide polymer chains being randomly located on the base polymer.

4,254,239

BIODEGRADABLE VINYLPYRROLIDONE POLYMERS, THEIR MANUFACTURE AND USE

Ferdinand Straub, Hockenheim; Hans-Uwe Schenck, Wachenheim; Siegfried Lang, Ludwigshafen, and Egon Brode, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 28, 1978, Ser. No. 973,798
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759150
Int. Cl.[3] A61K *31/79*
U.S. Cl. 525—123 **6 Claims**

1. A biodegradable vinylpyrrolidone polymer, usable as a blood plasma substitute, of the formula

$$A—[B—A]_n—B—A$$

where A is a vinylpyrrolidone polymer or copolymer block having a degree of polymerization of from 2 to 1,000, B is a short-chain connecting unit containing ester, amide, urea or urethane groups which groups are formed by

(a) hydroxyl groups in A and carboxylic acid groups in B resulting in ester groups,

(b) amino groups in A and carboxylic acid groups in B resulting in amide groups,

(c) amino groups in A and isocyanate groups in B resulting in urea groups,

(d) hydroxyl groups in A and isocyanate groups in B resulting in urethane groups and n is from 0 to 50.

4,254,240

CONTINUOUS PROCESS FOR THE PREPARATION OF BROMOCHLORINATED BUTYL RUBBER

Neil F. Newman, Edison; Robert Roper, Summit, and Roger K. West, Montclair, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 10, 1979, Ser. No. 74,156
Int. Cl.[3] C08F *8/20, 8/22*
U.S. Cl. 525—356 **8 Claims**

1. A continuous process for bromochlorinating butyl rubber to contain from about 1.0 to about 3.0 weight % bromine and from about 0.05 to about 0.5 weight % of chlorine comprising the steps of:

(a) providing in a first feed stream a solution of butyl rubber in a substantially inert solvent, said solution containing about 5 to about 30 weight percent of butyl rubber;

(b) providing a second feed stream of bromine chloride in vapor form;

(c) maintaining the relative flow rates of said first and second feed streams such that the ratio of moles of bromine chloride to moles of incorporated unsaturation in said butyl rubber is about 0.6 to 1 to about 1.5 to 1 while continu-

ously transferring said first and second feed streams to a high intensity mixer and contacting said streams in said mixer to provide a homogeneous reaction mixture;

(d) transferring said reaction mixture from step (c) to a second high intensity mixer, the mean transfer residence time being at least about 1 minute in order to complete the bromochlorination reaction;

(e) simultaneously adding to said second mixer an aqueous solution of a basic neutralization feed stream resulting in a two phase, partially neutralized reaction mixture;

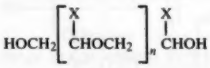
(f) transferring said two phase reaction mixture to polymer recovery and drying means, the residence time of said transfer being at least about 1 minute in order to complete the neutralization reaction, the pH of said mixture maintained between about 7 and 13.

4,254,241
PROCESS FOR PRODUCING POLYOXYALKYLENE GLYCOL MODIFIED POLYESTERS

Kurt Weinberg, Upper Saddle River, N.J., and Gordon C. Johnson, Armonk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,833
Int. Cl.[3] C08L *67/02, 71/02*
U.S. Cl. 525—408 **12 Claims**

1. A process for the catalytic manufacture of solid fiber forming polyesters of dicarboxylic acid compounds and aliphatic glycols modified with from 2 to 10 weight percent of a polyoxyalkylene glycol of the general formula:

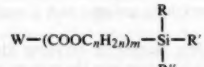


wherein X is hydrogen or methyl and n has an average value of from 4 to 250,000 when X is hydrogen and an average value of from 4 to 1,000 when X is methyl, in contact with a catalytic amount sufficient to catalyze the reaction of (I) a coordination complex catalyst composition of (A) and (C) or (II) the coordination complex catalyst of (A), (B) and (C); wherein:

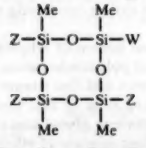
(A) is a metal halide of a metal selected from the group consisting of titanium, zirconium, zinc, germanium, tin, lead antimony and bismuth;

(B) is antimony glycollate;

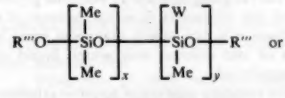
(C) is a silicon compound selected from the group consisting of:



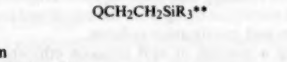
II



III



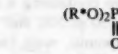
IV



V

wherein

W is $CH_2=CX-$ or



X is hydrogen or methyl and is methyl only when m is one;

R* is alkyl or haloalkyl having from 1 to 4 carbon atoms;

R** is methyl, ethyl, butyl, acetoxy, methoxy, ethoxy or butoxy;

R is methyl, ethyl, butyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R′ is methyl, methoxy, ethoxy, butoxy or trimethylsiloxy;

R″ is methoxy, ethoxy, butoxy, trimethylsiloxy or vinyldimethylsiloxy;

R‴ is methyl, ethyl, butyl or trimethylsilyl;

Me is methyl;

Z is methyl or W;

Q is an NH_2CH_2-, $NH_2CH_2CH_2NHCH_2-$, NC—, HS— or $HSCH_2CH_2S-$ group;

n is an integer having a value of from 2 to 5;

m is an integer having a value of zero or one;

x is an integer having a value of from 1 to 100; and

y is an integer having a value of from 1 to 100;

and wherein the mole ratio of (A):(C) is from 1:0.5 to 1:10 and the mole ratio of (B):(C) is from 0.2:1 to 2:1 in said coordination complex catalyst composition.

4,254,242
FIRE-RETARDANT RESIN COMPOSITION

Kayomon Kyo, Kyoto; Yasuhiko Asai, and Haruo Kohyama, both of Uji, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

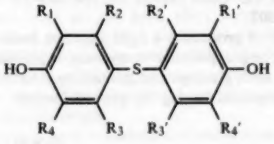
Filed May 26, 1978, Ser. No. 910,048
Claims priority, application Japan, May 30, 1977, 52/63868
Int. Cl.[3] C08L *77/00*
U.S. Cl. 525—425 **25 Claims**

1. A fire-retarding resin composition comprising

(A) an aromatic copolyester comprising the reaction product in about equimolar amounts of

(1) a mixture of terephthalic acid and isophthalic acid and/or the functional derivatives thereof with the terephthalic acid unit to the isophthalic acid unit molar ratio being about 9:1 to about 1:9 and

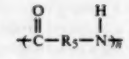
(2) a bisphenol of the general formula [I]



[I]

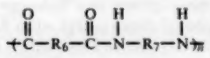
wherein —X— represents a member selected from the group consisting of —O—, —S—, $—SO_2$, —CO—, an alkylene group containing 1 to 5 carbon atoms and an alkylidene group containing 1 to 5 carbon atoms, and R_1, R_2, R_3, R_4, R_1', R_2', R_3' and R_4', which may be the same of different, each is selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine atom and an alkyl group containing 1 to 5 carbon atoms, and/or a derivative thereof;

(B) a polyamide containing therein a repeating unit of the general formula [II]:



[II]

or [III]



[III]

wherein R_5, R_6 and R_7, which may be the same or different, each represents an alkylene group containing 4 to 11 carbon atoms and n is an integer of from 30 to 500, and

(C) an aromatic halogen compound, with the amount of component (C) being 0.5 to B 40% by weight based on the total amount of components (A), (B) and (C), and with component (C) being present in a higher concentration in component (A) than in component (B), wherein component (C) is present in component (A) in an amount of at least 1.2 times by weight larger than the average concentration of component (C) when component (C) is dispersed uniformly in components (A) and (B).

4,254,243

HALOGEN CONTAINING COPOLYESTER RESINS

Max H. Keck, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 22, 1979, Ser. No. 14,384
Int. Cl.[3] C08L *67/02*
U.S. Cl. 525—444 **6 Claims**

1. Random copolyesters comprising ethylene terephthalate/tetrachlorobenzenedimethylene terephthalate copolyesters wherein said copolyester consists of from 2 to 50 mole percent of tetrachlorobenzenedimethylene terephthalate units and correspondingly from 98 to 50 mole percent of ethylene terephthalate units.

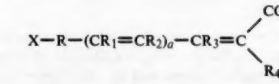
4,254,244

LIGHT-SENSITIVE MATERIALS

Allen P. Gates, Knaresborough, and Allan Saunderson, Bradford, both of England, assignors to Vickers Limited, London, England

Division of Ser. No. 636,363, Dec. 1, 1975, Pat. No. 4,117,039, which is a continuation-in-part of Ser. No. 463,428, Apr. 23, 1974, abandoned. This application Jan. 4, 1978, Ser. No. 866,829
Int. Cl.[3] C08F *261/02, 261/04, 283/10*
U.S. Cl. 525—502 **7 Claims**

1. A method of producing a light sensitive material which comprises reacting a polymer containing a plurality of hydroxyl groups with a compound containing a halo-sulphonyl group, said compound having the general formula



wherein R represents an aromatic radical; a is zero or unity; R_1, R_2 and R_3, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group or an aralkoxy group, R_4, when a is zero, represents an alkoxy carbonyl group, a carboxyl group, a phenyl group substituted with a deactivating group, or a halosulphonyl group; R_4, when a is unity represents an alkyl group, an alkoxy carbonyl group, a carboxyl group, a cyano group, a phenyl group substituted with a deactivating group, a halosulphonyl substituted phenyl group, or a hydrogen atom; and X represents a halosulphonyl group except when R_4 is a halosulphonyl substituted phenyl group in which case X is a deactivating group.

4,254,245

METHOD FOR PREPARING FURAN-EPOXY POWDER-LIKE BINDER

Shavkat Madaliev, ulitsa Yarmazar, 361; Gennady D. Varlamov, ulitsa Jubileinaya, 5, kv. 13; Ildgam A. Bekbulatov, ulitsa Kashkarskaya, 215, and Juldash Mamatov, ulitsa Pushkina, 50, kv. 60, all of Fergana, U.S.S.R.

Filed Dec. 14, 1978, Ser. No. 969,510
Int. Cl.[3] C08F *283/10*
U.S. Cl. 525—529 **4 Claims**

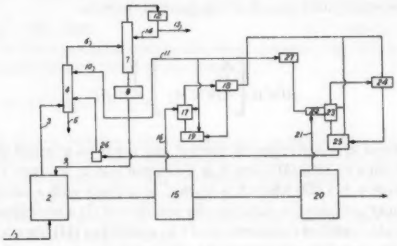
1. A method for preparing a furan-epoxy powder-like binder comprising reacting a resin obtained from the diglycidyl ether of bisphenol A with a nitrogen-containing furan monomer selected from the group consisting of furfuramide and 3-methyl-5-furylpyrazoline at a temperature ranging from 140° to 160° C. at a ratio between said nitrogen-containing furan monomer and said resin obtained from the diglycidyl ether of bisphenol A ranging from 0.2:5 to 3.4:5, followed by cooling of the resulting product to a temperature of not more than 30° C. and grinding said product to a powder-like condition.

4,254,246

COLUMN SYSTEM PROCESS FOR POLYESTER PLANTS

Ovidiu Dicoi, Offenbach am Main, and Hans Wewer, Schöeck, both of Fed. Rep. of Germany, assignors to Davy International AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,831
Int. Cl.[3] C07C *69/82*
U.S. Cl. 526—68 **8 Claims**



1. A continuous process for purifying and recovering at least 99% ethylene glycol from the vapour by-products generated in three reactors (esterification, prepolycondensation and polycondensation) during the reaction of ethylene glycol and terephthalic acid to produce polyethylene glycol terephthalate polymer, said by-products being contamined with aldehydes, water, diethylene glycol and oligomers, which comprises:

(a) providing an enriching column and a rectification column,

(b) introducing a first stream of ethylene glycol vapours from the esterification stage into the bottom of said enriching column, said first stream containing at least about 90% ethylene glycol,

(c) introducing a second stream of ethylene glycol condensate from the pre- and polycondensation reactors into said enriching column above said first stream for flow countercurrent to the upward flow of said first stream, thereby condensing said diethylene glycol and oligomers,

(d) removing the resulting mixture of ethylene glycol, diethylene glycol and oligomers from the bottom of said enriching column at a rate which maintains some liquid in the bottom of said column into which liquid said first stream is introduced,

(e) charging the resulting mixture of aqueous ethylene glycol vapour and aldehydes rising from the top of said enriching column into said rectification column,

(f) condensing a portion of said aqueous ethylene glycol vapour and refluxing the condensate in the rectification

column to condense ethylene glycol from said aqueous ethylene glycol vapour,

(g) removing from the top of said rectification column a portion of said aqueous vapours containing less than 440 ppm ethylene glycol, condensing the vapours and discharging the condensate directly to waste,

(h) withdrawing from the bottom of said rectification column ethylene glycol of at least 99.85% purity, and

(i) recycling at least a portion of said pure ethylene glycol directly into said esterification reactor.

4,254,247
NOVEL INITIATORS FOR ANIONIC POLYMERIZATION

Sylvie L. Boileau, Paris; Paul J. Caubere, Nancy; Serge L. Lecolier, Janville sur Juine, and Serge F. Raynal, Villejuif, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed May 24, 1977, Ser. No. 800,036

Claims priority, application United Kingdom, May 26, 1976, 21861/76; Dec. 15, 1976, 52387/76

Int. Cl.[3] C08F *4/46;* C08G *63/10;* C08F *4/08*

U.S. Cl. 526—180 **4 Claims**

1. A process of homopolymerization or copolymerization of monomers which are vinyl monomers or dienic monomers capable of undergoing anionic polymerization by opening of an ethylenic double bond in the presence of a solvent and wherein the initiator comprises the product from the association of an alkali metal amide and the salt from at least one compound which is an hydroxylated compound, with the same alkali metal in an aprotic solvent.

4,254,248
CONTACT LENS MADE FROM POLYMERS OF POLYSILOXANE AND POLYCYCLIC ESTERS OF ACRYLIC ACID OR METHACRYLIC ACID

Gary D. Friends, Ontario, N.Y., and Martin F. VanBuren, Chelmsford, Mass., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,922

Int. Cl.[3] C08F *236/20;* G02C *7/04*

U.S. Cl. 526—279 **31 Claims**

1. A soft, flexible, fillerless, hydrolytically stable, biologically inert, transparent contact lens with the capability of transporting oxygen sufficiently to meet the requirements of the human cornea comprising a polysiloxane monomer, α,ω terminally bonded through divalent hydrocarbon groups to polymerized, free radical polymerizably activated, unsaturated groups copolymerized with from about 20 percent by weight to about 80 percent by weight, based on the total weight of the solution, of a monomer selected from the group consisting of a polycyclic ester of acrylic acid and a polycyclic ester of methacrylic acid, forming a polymer in a crosslinked network having a tensile modulus of elasticity of at least about 200 g/mm^2 with a tear strength of at least about 5.0 g/mm thickness.

4,254,249
COPOLYMERS OF N,N-DIMETHYLACRYLAMIDE AND ACRYLAMIDE

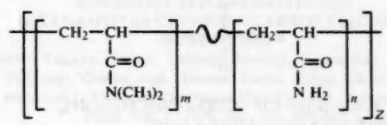
Ian W. Cottrell, Solana Beach; John K. Baird, and Jaewon L. Shim, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 17, 1978, Ser. No. 961,820

Int. Cl.[3] C08F *220/54*

U.S. Cl. 526—303 **11 Claims**

1. A hydrolyzed form of the copolymer of N,N-dimethylacrylamide and acrylamide of the formula:



I

where

m and n are whole numbers such that the weight:weight ratio of NNDMA to AM ranges from greater than 5:95 to about 95:5;

Z is a number such that the viscosity of the hydrolyzed copolymer is at least about 1000 cP (1% w/w solution in deionized water, Brookfield LVF viscometer, spindle 4, 60 rpm); and

~ indicates that the distribution of NNDMA and AM in the polymer chain is random

wherein the percent of hydrolysis which produces carboxyl groups ranges from about 5% to about 65%.

4,254,250
AMINE POLYMERS HAVING DEWATERING ACTIVITY

Raymond C. Glowaky, Niantic; Steven R. Kurowsky, and Robert J. Sysko, both of East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 4, 1978, Ser. No. 965,770

Int. Cl.[3] C08F *8/32, 26/06*

U.S. Cl. 525—350 **4 Claims**

1. A water-soluble amine polymer comprising: a water-conditioned condensation product of a nitrile polymer with from 1 to 20 molar equivalents of an aminating agent per molar equivalent of nitrile groups in the nitrile polymer, and from at least about 1 weight percent of a sulfur activator which is measured by the proportion of contained sulfur present in the activator relative to the weight of the nitrile polymer, wherein,

the nitrile polymer is selected from polyacrylonitrile having an average molecular weight within a range of from about 150 thousand to about 5 million or a copolymer having an average molecular weight within a range of from about 50 thousand to about 3 million which is composed of at least about 30 mole percent acrylonitrile monomer with the remainder being an ethylenically unsaturated comonomer selected from acrylic acid, alkyl acrylate, methacrylic acid, alkyl methacrylate, methacrylonitrile, acrylamide, N,N-dialkylacrylamide, methacrylamide, N,N-dialkylmethacrylamide, alkyl vinyl ketone, styrene, and alkyl crotonate, each alkyl substituent being from one to four carbon atoms in length,

the aminating agent is a mixture of about 30 to about 70 mole percent N,N-(di-n-alkyl)-1,omega-n-alkanediamine and about 70 to about 30 mole percent ethylenediamine, each alkyl group being 1 to 5 carbons in length and the n-alkane group being 2 to 6 carbons in length, and

the sulfur activator is selected from sulfur, hydrogen sulfide, carbon disulfide, mercaptoacetic acid, thoacetic acid or thioacetamide.

4,254,251
NOVEL PRESSURE SENSITIVE ADHESIVES

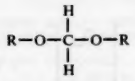
David W. Young, 18508 Clyde Rd., Homewood, Ill. 60430

Filed Jan. 7, 1980, Ser. No. 110,072

Int. Cl.[3] C08F *283/00*

U.S. Cl. 525—451 **6 Claims**

1. As an adhesive, the composition of matter, an acrylic ester formal corresponding to the formula:



in which R is —(CH=CH—COO—CH_2CH_2—OH)$_n$ and in which n is a number from 4 to 60.

4,254,252

CYCLIC POLYFORMALS AND METHOD FOR MAKING

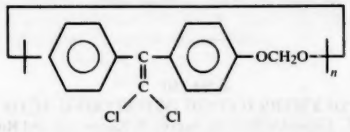
Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 739,562, Nov. 8, 1976, abandoned. This application May 15, 1978, Ser. No. 905,637

Int. Cl.[3] **C08G** *65/40*

U.S. Cl. 528—205 **2 Claims**

1. Cyclic polyformals of the formula,



where n is an integer having a value of from 2–25 inclusive.

4,254,253

PREPARATION OF HIGH MOLECULAR WEIGHT POLYESTER

James W. Brent, Jr., Munroe Falls, and Lawrence E. Shelley, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 21, 1980, Ser. No. 123,222

Int. Cl.[3] **C08G** *63/26*

U.S. Cl. 528—272 **6 Claims**

1. In the preparation of particulated, high molecular weight polyesters having an intrinsic viscosity of at least 0.6 deciliters per gram by solid phase polymerization of a corresponding particulated, low molecular weight melt polymerized linear condensation polyester prepolymer resin having an intrinsic viscosity of at least 0.35 deciliters per gram, the improvement which comprises simultaneously and continuously

(a) crystallizing said particulated prepolymer resin having an initial density of 1.34 grams per cubic centimeter or less to a density ranging from about 1.37 to about 1.39 grams per cubic centimeter;

(b) drying said particulated prepolymer having an initial water content of from about 0.40 percent to about 0.25 percent to a water content ranging from about 0.10 percent to about 0.005 percent; and

(c) heating said particulated prepolymer to a solid phase polymerization temperature ranging from about 185° C. to about 250° C. by subjecting said particulated prepolymer resin to a continuous and uninterrupted high frequency energy field in the range of from about 20 megahertz to about 300 megahertz for a period of time ranging from about 20 seconds to about 90 seconds.

4,254,254

POLYESTER AMIDE FABRIC ADHESIVES

Russell Gilkey, and Thomas H. Wicker, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,987

Int. Cl.[3] **C08G** *63/44, 69/44*

U.S. Cl. 528—288 **9 Claims**

1. A hot-melt adhesive composition comprising a polyester amide of from about 50 to about 85 mole % terephthalic acid, from about 15 to about 50 mole % of an aliphatic dicarboxylic acid having from 4 to 12 carbon atoms, about 60 to about 90 mole % of 1,6-hexanediol and from about 10 to about 40 mole % 1,6-hexanediamine, said polyesteramide having a glass transition temperature of from about −15° to about 15° C., and a melting point of about 70° to about 140° C.

4,254,255

AQUEOUS REACTION OF POLYAMINE WITH ALKYLENE DIHALIDE IN PRESENCE OF EMULSIFIER

Wilfried Löbach, Bonn; Wolfgang Lehmann, Leverkusen, and Friedhelm Müller, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 19, 1979, Ser. No. 4,803

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802487

Int. Cl.[3] **C08G** *69/48*

U.S. Cl. 528—312 **8 Claims**

1. A process for the preparation of a water-soluble condensation produce which is not self-crosslinking, comprising reacting a polyamine selected from the group consisting of a polyalkylenepolyamine, a reaction product of a dicarboxylic acid and excess polyalkylenepolyamine and a reaction product of a dicarboxylic acid, aminocarboxylic acid or lactam thereof and excess polyalkylenepolyamine, with an alkylene dihalide in an aqueous medium at 0° to 120° C. and a pH above 6 in the presence of an emulsifier.

4,254,256

AMINO SUGAR COMPOUND

Masaru Otani; Tetsu Saito; Shuzo Satoi; Junzo Mizoguchi, and Naoki Muto, all of Shizuoka, Japan, assignors to Toyo Jozo company, Ltd., Shizuoka, Japan

Filed Dec. 12, 1978, Ser. No. 968,697

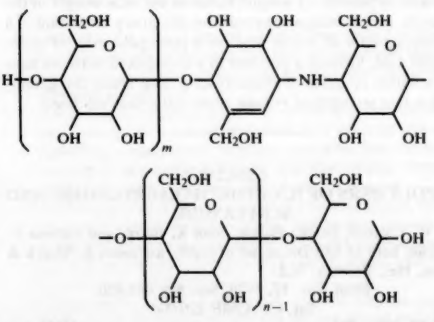
Claims priority, application Japan, Dec. 28, 1977, 52/157328

Int. Cl.[3] **A61K** *31/73;* **C07H** *5/06*

U.S. Cl. 536—18 **9 Claims**

1. An amino sugar compound represented by the formula:

[I]



(wherein m is an integer of 0 to 8, n is an integer of 1 to 8 and m+n is an integer of 1 to 8).

4,254,257
AMINE SALTS OF ACIDIC MICROBIAL POLYSACCHARIDES AND THEIR USE IN RECOVERY OF SUCH POLYSACCHARIDES

Calvin W. Schroeck, Eastlake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 742,717, Nov. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 652,007, Jan. 26, 1976, abandoned. This application Feb. 21, 1979, Ser. No. 13,507
Int. Cl.[3] C08B *37/00*
U.S. Cl. 536—52 22 Claims

1. A methanol-insoluble amine salt of an acidic polysaccharide produced by microbial fermentation, wherein the amine is at least one aliphatic or alicyclic polyamine having a molecular weight of at least 150 and containing at least three amino nitrogen atoms.

4,254,258
PROCESS FOR THE PREPARATION OF CELLULOSE ETHER DERIVATIVES

Donald F. Durso, Rocky Hill, N.J., assignor to Texas A & M University System, College Station, Tex.

Filed Mar. 28, 1979, Ser. No. 24,551
Int. Cl.[3] C08B *1/06, 1/08, 11/00, 11/12*
U.S. Cl. 536—98 9 Claims

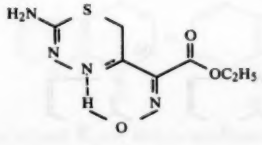
1. A process for the preparation of cellulose ether derivatives from a never-dried, non-purified natural cellulose material comprising:
fiberizing said natural material;
fluidizing said fiberized material;
contacting said fluidized material with a caustic reagent to form a soda cellulose; and
contacting said fluidized material with an etherifying reagent;
wherein said fiberizing and fluidizing steps are performed substantially simultaneously; and
wherein said contacting of said fluidized material with said caustic reagent and said contacting said fluidized material with an etherifying reagent are performed substantially simultaneously.

4,254,259
2-AMINO-5-ETHYLOVALYL-6H-1,3,4-THIADIAZINE OXIME

Ernest E. Campaigne, and Thomas Selby, both of Bloomington, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Nov. 2, 1978, Ser. No. 957,310
Int. Cl.[3] C07D *285/16, 277/30*
U.S. Cl. 544—8 1 Claim

1. 2-Amino-5-ethyloxalyl-6H-1,3,4-thiadiazine oxime of the formula (VIA)



(VIA)

4,254,260
3-SUBSTITUTED-7-SUBSTITUTED ALKANAMIDO-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Sakai; Takashi Masugi, Toyonaka; Hisashi Takasugi, Osaka, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 1, 1976, Ser. No. 691,842
Claims priority, application United Kingdom, Mar. 6, 1975, 23992/75; Sep. 16, 1975, 38108/75; Nov. 5, 1975, 45968/75
Int. Cl.[3] C07D *501/36*
U.S. Cl. 544—27 8 Claims

1. The compound 3-(5-methyl-1,3,4-thiadiazol-2-yl)thiomethyl-7-(2-trifluoroacetamidothiazol-4-yl)acetamido-3-cephem-4-carboxylic acid.

4,254,261
DEHYDROABIETYLAMMONIUM SALTS OF 6-OXO-2-PIPERIDINECARBOXYLIC ACID

Stewart M. Miller, Watchung, N.J., and John L. Smith, Minneapolis, Minn., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 15, 1979, Ser. No. 84,475
Int. Cl.[3] C07D *211/78*
U.S. Cl. 546—203 2 Claims

1. S-6-oxo-2-piperidinecarboxylic acid dehydroabietylammonium salt.

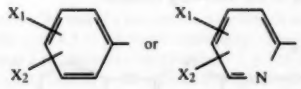
4,254,262
PROCESS FOR PRODUCING PHENOXYCARBOXYLIC ACID DERIVATIVE

Wataro Koike; Tadashi Sasuga, both of Shizuoka, and Chihiro Yazawa, Yokohama, all of Japan, assignors to Ihara Chemical Industry Co., Ltd., Tokyo, Japan

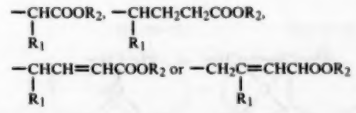
Filed Oct. 12, 1979, Ser. No. 84,164
Claims priority, application Japan, Nov. 1, 1978, 53-135060
Int. Cl.[3] C07D *213/57*; C07C *61/08, 69/767*
U.S. Cl. 546—287 2 Claims

1. In a process for producing a phenoxycarboxylic acid derivative having the formula

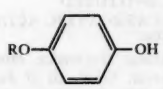
wherein R represents



and X_1 represents a hydrogen atom, a halogen atom, a lower alkyl group, trifluoromethyl group, nitro group or cyano group and X_2 represents a hydrogen atom, a halogen atom, a lower alkyl group, nitro group or cyano group, R′ represents



And R_1 and R_2 are the same and different and respectively represent hydrogen atom or a lower alkyl group, by reacting a phenol compound having the formula


(I)

with a halogen compound having

X—R′ (II)

wherein X represents a halogen atom, in the presence of a base the improvement comprising carrying out the reaction in the presence of a quaternary phosphonium salt selected from the group consisting of benzyltrialkylammonium salts, benzyltrialylphosphonium salts, tetraalkylammonium salts, tetraalkylphosphonium salts, triphenylalkylphosphonium salts and triphenylbenzylphosphonium salts in a nonpolar solvent at 50° to 90° C., the molar ratio of the quaternary ammonium salt or quaternary phosphonium salt to the phenol compound is from 0.005 to 0.05 and the molar ratio of the base to the phenol compound is from 0.05 to 1.5.

4,254,263

PROCESS FOR PURIFYING A CYANOPYRIDINE COMPOUND

Andrew W. Raab, Pensberg, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 2, 1979, Ser. No. 90,791
Int. Cl.[3] C07D *213/57*
U.S. Cl. 546—288 **9 Claims**

1. A process for obtaining (A) 2-(3-C_{3-4}-alkylamino-2-hydroxypropoxy)-3-cyanopyridine substantially free of (B) 2-(2-C_{3-4}alkylamino-1-hydroxymethylethoxy)-3-cyanopyridine which comprises

(1) treating a mixture containing (A) and (B) with fumaric acid in ethanol,

(2) separating the precipitate which forms, and

(3) treating said precipitate with an appropriate base, whereby compound (A) substantially free of compound (B) is obtained.

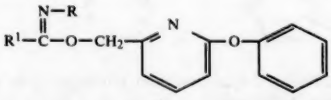
4,254,264

(6-PHENOXY-2-PYRIDYL) METHYL ESTERS OF IMIDATES

Gustave K. Kohn, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Dec. 10, 1979, Ser. No. 102,050
Int. Cl.[3] C07D *213/53*
U.S. Cl. 546—291 **15 Claims**

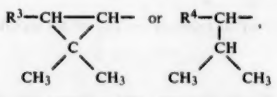
1. A compound of the following formula:



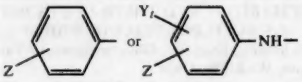
wherein,

R is hydrogen, lower alkyl, phenyl, or substituted phenyl; and

R^1 is



wherein R^3 is lower alkyl, lower haloalkyl, lower alkenyl or lower haloalkenyl; and R^4 is the group



in which t is zero, one, two, three or four; Y is independently selected from hydrogen, lower alkyl, lower fluoroalkyl, lower alkoxy, lower alkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, halogen, and lower fluoroalkylthio; and Z is independently selected from the values of Y, cycloalkyl, and lower fluoroalkoxy; or Y and Z form a methylenedioxy group.

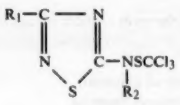
4,254,265

SELECTED 5-TRICHLOROMETHYLTHIOAMINO DERIVATIVES OF 3-TRIHALOMETHYL-1,2,4-THIADIAZOLE AND THEIR USE AS FUNGICIDES

Walter A. Gay, Cheshire, and Elizabeth A. Twohig, Seymour, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 21, 1980, Ser. No. 142,201
Int. Cl.[3] A01N *43/82*; C07D *285/08*
U.S. Cl. 548—128 **5 Claims**

1. A compound of the formula:



wherein R_1 is CCl_3 or CF_3; and R_2 is hudrogen, a lower alkyl having 1 to 4 carbon atoms, phenyl and substituted phenyl wherein said substituents on said phenyl group are lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, amino, nitro, halo and mixtures thereof.

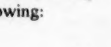
4,254,266

FLUORINATED HETEROCYCLIC SULFIDES

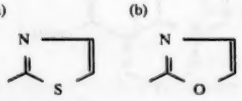
Sameeh S. Toukan, Phoenixville, and Murray Hauptschein, Glenside, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 587,794, Jun. 17, 1975, Pat. No. 4,177,351, which is a division of Ser. No. 396,649, Sep. 12, 1973, Pat. No. 3,933,819, which is a continuation-in-part of Ser. No. 171,325, Aug. 21, 1971, abandoned. This application Jul. 30, 1979, Ser. No. 61,567
Int. Cl.[3] C07D *277/74, 277/36, 263/46*
U.S. Cl. 548—173 **8 Claims**

1. A fluorinated alkyl sulfide represented by the formula:



where R_f is selected from the group consisting of perfluoroalkyl, perfluoroisoalkoxyalkyl and perfluoromonochloralkyl radicals having from 5 to 13 carbon atoms and n is an integer of 2 or 3, and Q is selected from the group consisting of the following:



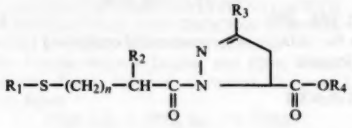
4,254,267

MERCAPTOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 25, 1979, Ser. No. 88,425
Int. Cl.[3] C07D *401/04, 405/04, 409/04*
U.S. Cl. 548—379 8 Claims

1. A compound having the formula



or a basic salt thereof, wherein:

R_1 is hydrogen, alkyl, aryl, arylalkyl or

wherein R_5 is alkyl or aryl;

R_2 is hydrogen, alkyl or haloalkyl;

R_3 is 2-furanyl, 3-furanyl, 2-thienyl, 3-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl or any of the aforementioned groups substituted with one or two halogens or alkyl groups;

R_4 is hydrogen, alkyl or arylalkyl; and

n is 0, 1 or 2; wherein the term "aryl", as used by itself or as part of a larger group, refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, hydroxy,

nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups, and the terms "alkyl" and "alkoxy", as used individually or as part of a larger group, refer to groups having 1 to 8 carbon atoms.

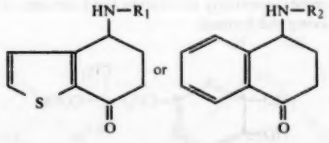
4,254,268

PROCESS FOR PREPARATION 4,5,6,7-TETRAHYDRO-7-OXOBENZO-[b]-THIOPHENES AND 1,2,3,4-TETRAHYDRO-4-OXO-1-NAPHTHALENES

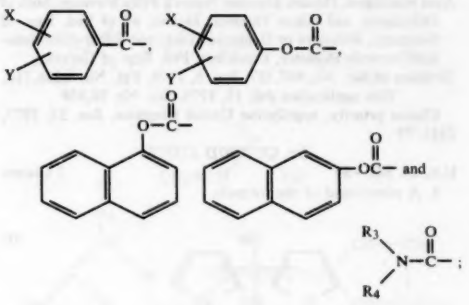
Henry L. Strong, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 834,014, Sep. 16, 1977, abandoned. This application Jun. 22, 1978, Ser. No. 918,299
Int. Cl.[3] C07D *333/54;* C07C *103/127, 127/19*
U.S. Cl. 549—51 8 Claims

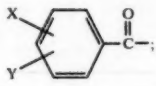
1. A process for the preparation of a compound of the formula:



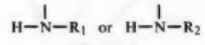
wherein R_1 and R_2 are each a substituent selected from the group consisting of alkanoyl C_1–C_7, halogen-substituted



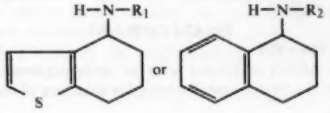
R_3 is a substituent from hydrogen and alkyl C_1–C_4; R_4 is a substituent selected from hydrogen, alkyl C_1–C_8, alkanoyl C_1–C_4, halogen-substituted alkanoyl C_2–C_4 and



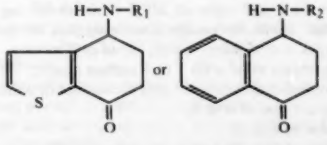
and when



is each cyclized, each represents phthalimido; X and Y are selected from hydrogen, halogen, nitro, alkyl C_1–C_4 and alkoxy C_1–C_4; the racemic mixtures and the optical isomers thereof, consisting essentially in the steps of: oxidizing a compound of the formula:



wherein R_1 and R_2 are each a substituent as hereinabove defined; with 2.5 to 3.2 molar equivalents of potassium permanganate at a temperature ranging from 0° C. to 50° C., in a solvent selected from aqueous solutions of acetone, tert-butanol, pyridine and acetonitrile, in the pH of from 6 to below 11, in the presence of a buffer selected from magnesium sulfate, calcium sulfate, sodium bicarbonate and acetic acid, for a period of time sufficient to essentially complete the reaction and recovering a compound of the formula:



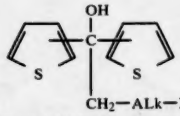
where R_1 and R_2 are as defined hereinabove.

4,254,269
DITHIENYL BETA-HALOETHYL CARBINOLS

Axel Kleemann, Hanau; Ingomar Nubert; Fritz Stroman, both of Offenbach, and Klaus Thiemer, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 867,157, Jan. 5, 1978, Pat. No. 4,206,213.
This application Jul. 12, 1979, Ser. No. 56,838
Claims priority, application United Kingdom, Jan. 12, 1977, 1121/77
Int. Cl.[3] C07D *333/12*
U.S. Cl. 549—59 2 Claims

1. A compound of the formula



(II)

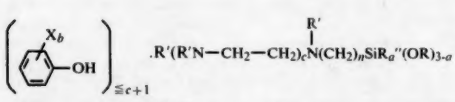
where Alk is CH_2 and X is chlorine, bromine or iodine.

4,254,270
SALT-LIKE PRODUCTS OF THE ADDITION OF PHENOLS ONTO AMINO ORGANOSILANE ESTERS AND METHOD FOR THE PREPARATION THEREOF

Hans-Joachim Kötzsch, and Hans-Joachim Vahlensieck, both of Rheinfelden, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 2, 1979, Ser. No. 90,715
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2847400
Int. Cl.[3] C07F *7/10*
U.S. Cl. 556—413 25 Claims

1. An adduct of phenol with an aminoorganosilane ester with salt-like charge-transfer-complex structure of the general formula



wherein

R represents an alkyl moiety of 1 to 8 carbon atoms or ethylene glycol or polyethylene glycol or propylene glycol or polypropylene glycol moieties terminally closed with a lower alkyl or acyl group;

R′ represent hydrogen or alkyl moieties having 1 to 20 carbon atoms optionally containing one or more ether bridges, a cycloalkyl moiety or an aryl moiety;

R″ represents alkyl with 1 to 8 carbon atoms;

X represents halogen or C_{1-4} alkyl moieties or a nitro group;

a being a value of 0 to 3;

b a value of 0 to 5;

c a value of 0 to 20; and

n a value of 1 to 6.

4,254,271
ADDITION OF DIALKYLHALOGENO-HYDRIDOSILANES TO UNSATURATED HYDROCARBON COMPOUNDS

Ulrich Finke, Ettlingen, and Hans-Heinrich Moretto, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 2,930
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804204
Int. Cl.[3] C07F *7/08*
U.S. Cl. 556—479 5 Claims

1. In the addition of an unsaturated compound onto a silane of the formula

$$R_1R_2SiXH$$

wherein

X is Cl or Br, and

R_1 and R_2 each independently is an alkyl, aryl or aralkyl radical with up to 20 C atoms, or an alkenyl or alkinyl radical with up to 12 C atoms,

the improvement which comprises effecting the addition reaction in the presence of at least one of aluminum chloride, aluminum bromide, aluminum oxychloride and aluminum oxybromide.

4,254,272
AROMATIC DIAMINES AND POLYURETHANES CURED THEREBY

Daniel A. Chung, North Canton, and John P. Lawrence, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 21, 1979, Ser. No. 13,697
Int. Cl.[3] C07C *101/68;* C08G *18/32*
U.S. Cl. 560—19 1 Claim

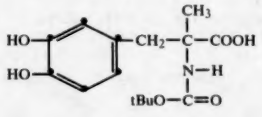
1. A substituted aromatic diamine selected from cyclohexyl-3,5-diamino-4-tert-butylbenzoate and phenyl-3,5-diamino-4-tert-butylbenzoate.

4,254,273
PROCESS FOR PREPARING ESTERS OF α-METHYL-3,4-DIHYDROXYPHENYLALANINE

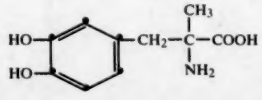
Burwell F. Powell, Neshanic, N.J., and Ralph F. Hirschmann, Blue Bell, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 894,451, Apr. 7, 1978, abandoned, which is a continuation of Ser. No. 746,227, Dec. 1, 1976, abandoned, which is a division of Ser. No. 586,007, Jun. 11, 1975, abandoned. This application Aug. 6, 1979, Ser. No. 64,316
Int. Cl.[3] C07C *125/065*
U.S. Cl. 560—29 3 Claims

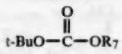
1. A process for preparing the L-isomer of a compound of the formula



which consists essentially of treating the L-isomer of the compound having the formula



with a compound of the formula



in a di-C_{1-4}-alkylamide solvent in the presence of triethylamine wherein R_7 is 2,4,5-trichlorophenyl or pentafluorophenyl.

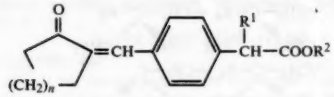
4,254,274

CYCLOALKYLIDENEMETHYLPHENYLACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Atsusuke Terada; Shigeru Tanaka, and Eiichi Misaka, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 929,937
Claims priority, application Japan, Aug. 16, 1977, 52/98121
Int. Cl.³ C07C *69/753, 59/86*
U.S. Cl. 560—51 **23 Claims**

1. A compound having the formula



(I)

wherein R is a methyl group, R^2 is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms, n is an integer from 1 to 2, and non-toxic pharmacetutically acceptable salts thereof.

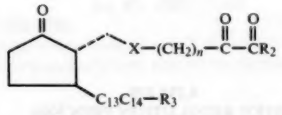
4,254,275

1-DESCARBOXY-1-KETOESTER (KETOACID)-PROSTAGLANDINS

Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 27, 1979, Ser. No. 79,620
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—53 **17 Claims**

1. Compounds of the formula



Ib

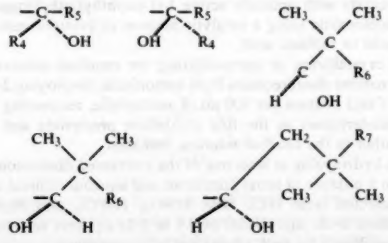
wherein

R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy;

X is selected from the group $—CH_2—CH_2$;

$C_{13}C_{14}$ is selected from the group trans —CH=CH— and $—CH_2—CH_2—$;

n is the integer 2, 3 or 4; and R_3 is selected from the group consisting of:



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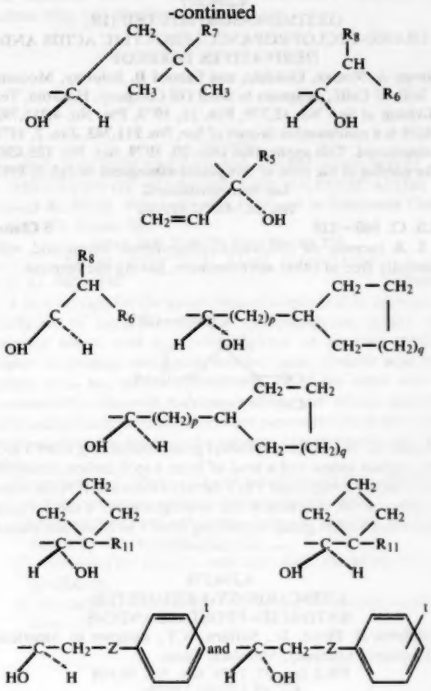


wherein R_4 is hydrogen or methyl; R_5 is selected from the group consisting of C_4–C_7 alkyl; R_6 is selected from the group consisting of C_3–C_6 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; p is an integer from 0 to 3; q is 1 or 2; Z is a divalent radical selected from the group consisting of —O— and $—CH_2—$; and t is selected from the group consisting of hydrogen; chloro, fluoro, dichloro, trifluoromethyl, methoxy; the racemic mixtures thereof; the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

4,254,276

PROCESS FOR THE PREPARATION OF PHENOLIC ETHERS

Giuseppe Iori, and Ugo Romano, both of Milan, Italy, assignors to Anic, S.p.A., Palermo, Italy

Filed Jul. 19, 1979, Ser. No. 58,949
Claims priority, application Italy, Jul. 21, 1978, 25974 A/78
Int. Cl.³ C07C *41/16, 41/01*
U.S. Cl. 560—64 **4 Claims**

1. A process for the preparation of phenolic ethers comprising reacting phenol or a derivative thereof with an alkyl ester of carbonic acid at a temperature of less than 160° C. in the presence of a catalytic amount of a base and an organic or inorganic iodide.

4,254,277
OXYIMINO-SUBSTITUTED (1R, TRANS)-CYCLOPROPANECARBOXYLIC ACIDS AND DERIVATIVES THEREOF

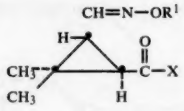
Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 13,778, Feb. 21, 1979, Pat. No. 4,211,792, which is a continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,450 The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.[3] **C07C** *131/02*

U.S. Cl. 560—118 **5 Claims**

1. A racemic or (1R,trans)-cyclopropane compound, substantially free of other stereoisomers, having the formula



wherein R^1 is a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms and a total of from 4 to 9 carbon atoms, or a cycloalkyl group from 3 to 6 carbon atoms and X is chlorine, bromine or OR in which R is a hydrogen atom, a salt-forming cation or an alkyl group containing from 1 to 20 carbon atoms.

4,254,278
1-DESCARBOXY-1-KETOESTER (KETOACID)-PROSTAGLANDINS

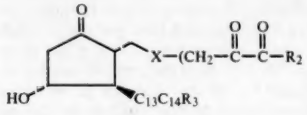
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 27, 1979, Ser. No. 79,405

Int. Cl.[3] **C07C** *177/00*

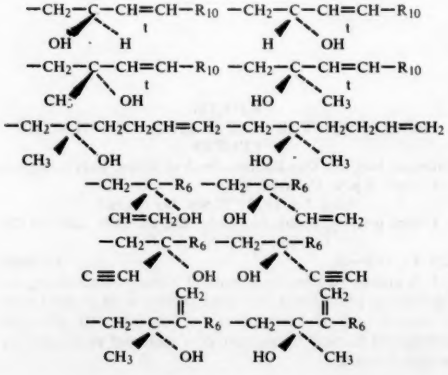
U.S. Cl. 560—121 **118 Claims**

1. A compound of the formula



Ia

wherein R_2 is selected from the group hydroxy and C_1 to C_7 alkoxy; X is selected from the group cis or trans —CH=CH— and —CH_2—CH_2; C_{13}—C_{14} is selected from the group trans —CH=CH— and —CH_2—CH_2—; n is the integer 2, 3 or 4; and R_3 is selected from the group



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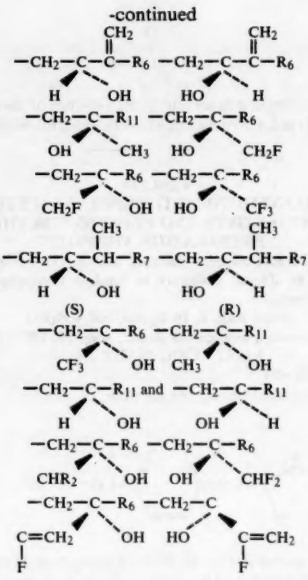


wherein R_6 is C_3 to C_5 alkyl, R_7 is C_2 to C_4 alkyl, R_{10} is C_1 to C_4 alkyl and R_{11} is C_3 to C_7 alkyl, the racemic mixtures thereof, the mirror images thereof and where R_2 is hydroxy, the pharmaceutically acceptable salts thereof.

4,254,279
ESTER RESOLUTION PROCESS

Charles E. Hatch, III, Pennington, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 24,149, Mar. 26, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,412

Int. Cl.[3] **C07C** *69/72*

U.S. Cl. 560—178 **2 Claims**

1. A process for resolving 1-trichloromethyl-3-methyl-2-butenyl acetoacetate which comprises

(i) condensing 1-trichloromethyl-3-methyl-2-butenyl acetoacetate with optically active 1-(1-naphthyl)ethylamine in acetonitrile using a catalytic amount of protonic mineral acid or sulfonic acid,

(ii) crystallizing or recrystallizing the resultant mixture of enamine diastereomers from acetonitrile, employing 2–4 g of said mixture per 100 ml of acetonitrile, recovering one diastereomer as the first crystalline precipitate and the other in the residual solution, and then

(iii) hydrolyzing at least one of the recovered diastereomers in a mixture of tetrahydrofuran and aqueous mineral acid selected from HCl, HBr, HNO_3, H_3PO_4, and H_2SO_4, about 1–20 equivalents of 0.1 to 4 N aqueous acid being employed for each equivalent of diastereomer.

4,254,280

CYCLOPROPANE DERIVATIVE

Johannes Syrier, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 55,854, Jul. 9, 1979. This application Nov. 23, 1979, Ser. No. 96,870

Claims priority, application United Kingdom, Jul. 19, 1978, 30335/78; Jul. 19, 1978, 30336/78; Jul. 19, 1978, 30339/78; Jul. 19, 1978, 30373/78

Int. Cl.[3] **C07C** *69/145*

U.S. Cl. 560—231 **3 Claims**

1. 1-[2-(2,2-dihalovinyl)-3,3-dimethylcyclopropyl]-3-oxo-2-butyl acetate wherein each halo is independently chloro, fluoro or bromo.

4,254,281

NOVEL VITAMIN A ACETATE PROCESS

Kuno Schleich, Zollikerberg, and Hansjörg Stoller, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 814,816, Jul. 12, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,698

Claims priority, application Switzerland, Jul. 26, 1976, 9524/76

Int. Cl.[3] **C07C** *67/00, 175/00*

U.S. Cl. 560—260 **6 Claims**

1. A process for the preparation of vitamin A acetate which comprises reacting an aqueous solution of a salt formed by the reaction of vinyl-β-ionol and triphenylphosphine with an acid selected from the group consisting of sulfuric acid, a bisulfate, phosphoric acid and hydrochloric acid, with γ-acetoxytiglic aldehyde in the presence of a base.

4,254,282

PROCESS FOR PREPARING CIS-3-(2,2-DIHALOVINYL)-2,2-DIMETHYLCYCLOPROPANECARBOXYLIC ACID

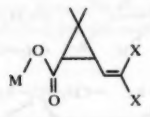
Kiyoshi Kondo; Toshiyuki Takashima, and Daiei Tunemoto, all of Kanagawa, Japan, assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 736, Jan. 3, 1979, abandoned, which is a continuation-in-part of Ser. No. 875,649, Feb. 6, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,826

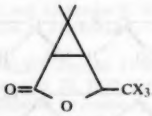
Int. Cl.[3] **C07C** *51/09*

U.S. Cl. 562—506 **13 Claims**

1. A process for preparing a cis-3-(2,2-dihalovinyl)-2,2-dimethylcyclopropanecarboxylic acid of the formula



wherein each X is the same or different and is a chlorine or bromine atom, and the carboxy and dihalovinyl groups are cis with respect to each other, which comprises treating a lactone of the formula



wherein the X's are the same or different and have the values given above with a metal selected from zinc, magnesium, and sodium in a solvent selected from acetic acid, alcohols, ethers, and mixtures thereof, thereby simultaneously opening the lactone ring and eliminating one X atom.

4,254,283

PROCESS FOR PREPARING ADIPIC ACID WITH RECOVERY OF GLUTARIC AND SUCCINIC ACIDS

George H. Mock, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 7, 1979, Ser. No. 46,274

Int. Cl.[3] **C07C** *51/31, 51/43, 51/44, 55/14*

U.S. Cl. 562—530 **7 Claims**

1. In a process for the production of adipic acid by nitric acid oxidation of cyclohexanol and cyclohexanone, where the product adipic acid is recovered from an aqueous mother liquor containing nitric acid, succinic acid, glutaric acid and adipic acid, and where substantially all of the nitric acid is subsequently removed by evaporation, and where succinic acid and glutaric acid are thereafter recovered from the nitric acid evaporation residue, the process improvement comprising:

(1) crystallizing adipic acid and succinic acid from the nitric acid evaporation residue, leaving glutaric acid;

(2) forming succinic anhydride from the succinic acid obtained by the crystallization (1);

(3) separating the succinic anhydride from the adipic acid by distillation;

(4) crystallizing and thereby recovering the glutaric acid left from (1).

4,254,284

PROCESS FOR PREPARING 4-AMINOHEX-5-YNOIC ACID

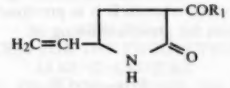
Maurice W. Gittos, Strasbourg, and Gerard J. Letertre, Souffelweyersheim, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Division of Ser. No. 45,005, Jun. 4, 1979, which is a division of Ser. No. 873,273, Jan. 30, 1978, Pat. No. 4,178,463. This application Jan. 14, 1980, Ser. No. 111,897

Int. Cl.[3] **C07C** *101/28*

U.S. Cl. 562—574 **1 Claim**

1. A process for the preparation of 4-aminohex-5-ynoic acid or salt thereof which comprises treating a pyrrolidone compound of the formula



wherein R_1 is hydroxy, amino, or tertiary-butoxy with a strong base in a lower alcohol solvent at a temperature of about 20° C. to the reflux temperature of the solvent for about 6 to 24 hours when R_1 is amino, decarboxylating the 3-carboxy derivative or its tertiary butyl ester to give 5-vinyl-2-pyrrolidone which is treated in a chlorinated hydrocarbon solvent or acetic acid with an equivalent amount of bromine at about 0° to 35° C. with stirring for about 4 to 24 hours, treating the thus formed dibromo intermediate in an ether solvent or liquid ammonia with a strong base for about 1 to 40 hours at about −80° to 125° C. and quenching with water followed by acid hydrolysis, and when the free base is desired subsequent treatment with base.

4,254,285

1-HYDROXYMETHYL-1-1-OXO PROSTANE DERIVATIVES OF THE E AND F SERIES

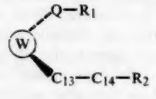
Allan Wissner, Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 961,032, Nov. 15, 1978, which is a continuation-in-part of Ser. No. 858,589, Dec. 8, 1977, Pat. No. 4,202,822, and Ser. No. 858,588, Dec. 8, 1977, Pat. No. 4,170,597, and Ser. No. 858,580, Dec. 8, 1977, Pat. No. 4,197,245, and Ser. No. 858,579, Dec. 8, 1977, Pat. No. 4,212,969, and Ser. No. 858,504, Dec. 8, 1977, Pat. No. 4,172,839, and Ser. No. 858,487, Dec. 8, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,953

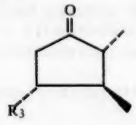
Int. Cl.³ C07C *177/00*

U.S. Cl. 568—379 **35 Claims**

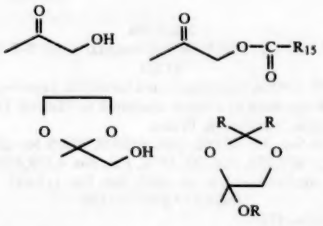
1. An optically active compound of the formula:



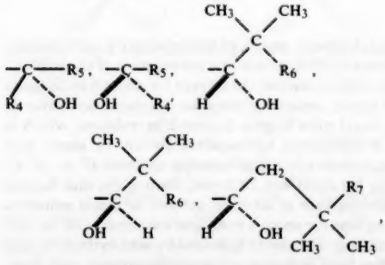
wherein Q is $-(CH_2)-_f$ wherein f is an integer from 5 to 7 inclusive; C_{13}–C_{14} is ethylene or trans-vinylene; W is:



and R_3 is hydrogen or hydroxyl; R_1 is selected from the group consisting of:



wherein R is C_1–C_4 alkyl; and R_{15} is selected from the group consisting of C_1–C_4 alkyl, C_1 to C_4 alkoxy, di-(C_1–C_4)-alkylamino, and phenyl or phenyl substituted with one or more substituents selected from the group consisting of C_1–C_4 alkyl, —OR, —SR, F or Cl wherein R is as previously defined; and R_2 is selected from the group consisting of:



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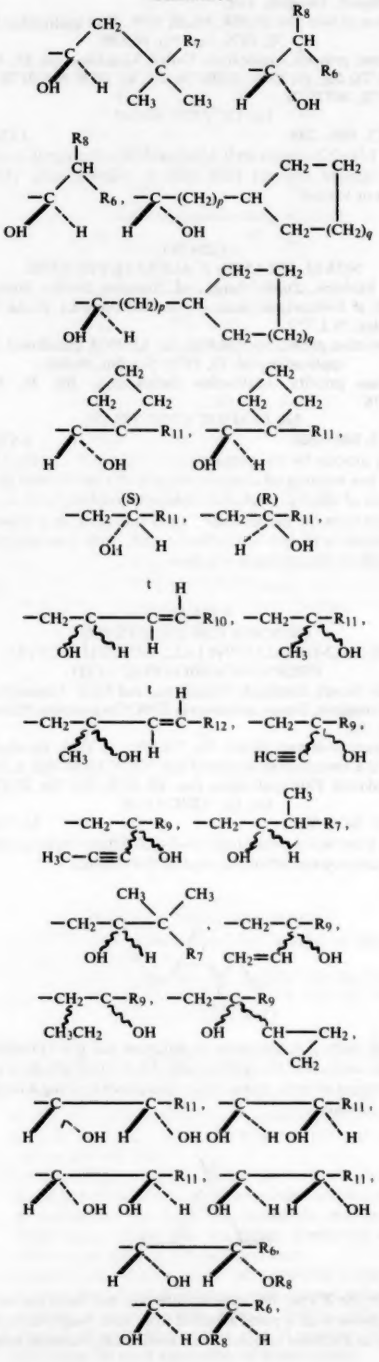

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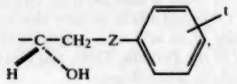
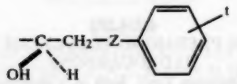
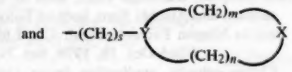
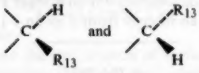


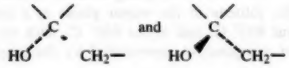




wherein R_4 is hydrogen or methyl; R_5 is selected from the group consisting of C_4–C_7 alkyl; R_6 is selected from the group consisting of C_3–C_6 alkyl; R_7 is selected from the group consisting of C_2–C_4 alkyl; R_8 is selected from the group consisting of C_1–C_2 alkyl; R_9 is selected from the group consisting of C_3–C_6 alkyl; R_{10} is selected from the group consisting of C_1–C_4 alkyl; R_{11} is selected from the group consisting of C_3–C_7 alkyl; R_{12} is selected from the group consisting of C_1–C_4 alkyl; p is an integer from 0 to 3; q is 1 or 2; X is a divalent radical selected from the group consisting of:



wherein R_{13} is selected from the group consisting of C_1–C_7 alkyl, hydrogen, and a phenoxy group optionally substituted with a substituent selected from the group consisting of halogen, trifluoromethyl and C_1–C_4 alkoxy; Y is a divalent radical selected from the group consisting of:



Z is a divalent radical selected from the group consisting of —O— and —CH_2—; m is zero or an integer from 1 to 4 inclusive; n is zero or an integer from 1 to 4, inclusive; with the proviso that the sum of m and n has the value of 1 to 4; s is zero or the integer 1; and t is selected from the group consisting of hydrogen, chloro, fluoro, dichloro, trifluoromethyl, methoxy; the racemic mixture thereof; and the mirror image thereof.

4,254,286

BENZALDEHYDE COMPOUNDS

Ivan Kompis, Oberwil, and Alexander E. Wick, Riehen, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

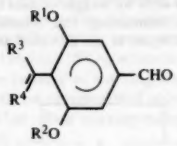
Division of Ser. No. 900,357, Apr. 26, 1978, Pat. No. 4,203,980. This application Oct. 22, 1979, Ser. No. 87,617

Claims priority, application Luxembourg, May 5, 1977, 77269; Switzerland, Mar. 10, 1978, 2650/78

Int. Cl.³ C07C *47/548*

U.S. Cl. 568—442 **1 Claim**

1. A compound of the formula



wherein R^1 and R^2, independently, are C_{1-6}-alkyl, R^3 is C_{1-3}-alkyl and R^4 is methylene or C_{2-4}-alkylidene.

4,254,287

REMOVAL OF CATALYST FROM ETHOXYLATES BY CENTRIFUGATION

William C. Ziegenhain; R. Tom Jackson, and LeRoy Rose, all of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jul. 5, 1979, Ser. No. 55,123

Int. Cl.³ C07C *41/34, 43/11*

U.S. Cl. 568—621 **2 Claims**

1. A method for reducing the barium content of ethoxylated products obtained from the barium catalyzed ethoxylation of alkanols comprising

(a) adding from about 130% to 300% based upon the stoichiometric amounts of catalyst present of sulfuric acid to ethoxylated product,

(b) adding at least 2.8 weight percent of water and up to about 10 weight percent of water based upon the ethoxylated product and allowing the solution to age at a temperature of about 200° F. for at least 30 minutes, then

(c) centrifuging at about 10,000 gravities for at least 30 seconds until barium levels are reduced to 10 parts per million or less in the finished ethoxylate product.

4,254,288

CATALYTIC DEHYDROGENATION

Keith Gladwin, Chesterfield, England, assignor to Coalite Group Limited, England

Filed Jul. 6, 1979, Ser. No. 55,300

Int. Cl.³ C07C *37/06*

U.S. Cl. 568—652 **19 Claims**

1. In the method of dehydrogenating a compound having a six-membered carbocyclic ring in the molecule, the ring having a degree of saturation greater than that of a benzene ring, wherein said compound is dehydrogenated using a dehydrogenation catalyst to produce the corresponding aromatic compounds, the improvement which comprises heating said compound at a temperature and time sufficient to effect dehydrogenation to produce the corresponding aromatic compound in the presence of a catalyst system comprising elemental palladium together with sodium carbonate and elemental sulphur or an organic co-valent sulphur compound.

4,254,289

PROCESS FOR THE PRODUCTION OF ALKENE-1,5-DIOLS

Robert G. Wall, Pinole; Shigeto Suzuki, San Francisco, and John B. Wilkes, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 616,794, Sep. 25, 1975, abandoned, which is a continuation of Ser. No. 458,625, Apr. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 379,511, Jul. 16, 1973, abandoned. This application Jan. 12, 1977, Ser. No. 758,727

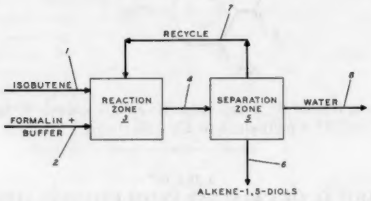
Int. Cl.³ C07C *33/035*

U.S. Cl. 568—857 **10 Claims**

1. A process for the production of 3-methylene-1,5-pentanediol and 3-methyl-2-pentene-1,5-diol, which comprises:

(a) feeding a reaction mixture comprising 3-methyl-3-buten-1-ol, formaldehyde and isobutene at a mol ratio of 3-meth-

yl-3-buten-1-ol to formaldehyde of at least 1:1 and wherein from 5 to 40% by weight of said mixture is isobutene and therein contacting the 3-methyl-3-buten-1-ol with the formaldehyde at an elevated temperature and



pressure while the pH of the reaction mixture is maintained from about 4.0 to 7.0 for a period of time sufficient to form diols, said temperature being below the critical temperature of said reaction mixture, and

(b) withdrawing said diols from the reaction zone.

4,254,290

ACIDIC MIXED OXIDE CATALYTIC DE-ALKYLATION OF TERTIARY-ALKYL-ETHER-ALKANOLS

Gregory R. Chambers, Rexford, and William E. Smith, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,577
Int. Cl.³ C07C *31/18*
U.S. Cl. 568—866 **10 Claims**

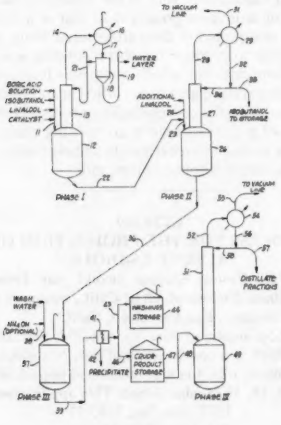
1. A de-alkylation process which comprises contacting a tertiary alkylether-alkanol with an acidic solid silica-alumina mixed oxide whereby alkanediols are formed in substantial absence of cyclic ethers.

4,254,291

ALLYLIC REARRANGEMENT PROCESS

Bernard J. Kane, Atlantic Beach, Fla., assignor to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 966,635, Dec. 5, 1978, abandoned. This application Aug. 22, 1979, Ser. No. 68,507
Int. Cl.³ C07C *33/02, 35/18, 29/56;* C07F *5/04*
U.S. Cl. 568—875 **41 Claims**



1. A process for allylic rearrangement which comprises: forming an isomerization reaction mixture containing allylic tertiary alcohologen; isomerizing said tertiary allylic alcohologen to primary and/or secondary allylic alcohologens by subjecting it to liquid phase catalytic isomerization conditions in the presence of a catalytic amount of a transition metal compound wherein the metal is selected from Group V, VI or VII of the Periodic Table said allylic tertiary alcohologen being an ester or alcoholate of an acid or a hydroxide of an element in Group III or IV of the Periodic Table, and cleaving the resulting isomerized allylic alcohologens.

4,254,292

METHOD FOR PREPARING POLYCYCLIC AROMATIC HYDROCARBONS

Isoo Shimizu; Okitsugu Tsuji, both of Yokohama; Eiichi Matsuzaka, and Atsushi Sato, both of Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 85,979
Claims priority, application Japan, Oct. 25, 1978, 53-131205
Int. Cl.³ C07C *2/20, 15/12*
U.S. Cl. 585—320 **7 Claims**

1. A method for preparing polycyclic aromatic hydrocarbons in which at least one member selected from the group consisting of styrene, α-methylstyrene, β-methylstyrene and vinyltoluene is dimerized and/or codimerized to produce unsaturated dimer and/or codimer in the first step reaction and said unsaturated dimer and/or codimer is caused to react with an aromatic hydrocarbon or hydrocarbons in the second step reaction and both said first and second step reactions are carried out in the presence of a catalyst which is represented by the general formula: RCF_2SO_3H, in which the symbol R is Cl, F or $C_nF_pCl_{2n+1-p}$, wherein n is an integer from 1 to 3, inclusive, and p is also an integer from 1 to $2n+1$, inclusive.

4,254,293

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo., and Alex N. Williamson, Greensboro, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,982
Int. Cl.³ C07R *2/72*
U.S. Cl. 585—428 **18 Claims**

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 400° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a^1M_b^2O_x$$

where M^1 is bismuth and M^2 is at least one element selected from zinc, germanium, thorium, the lanthanides, Groups 1a, 3b, 4b, and 8 of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1 and M^2 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,254,294

POLYMERIZATION REACTIONS IN THE PRESENCE OF A CATALYST CONTAINING ALUMINUM OXIDE, BORON OXIDE AND HALOGEN

Bernard Juguin, Rueil Malmaison; Jean-Pierre Franck, Bougival; Jean-Francois Le Page, and Gabriel de Gaudemaris, both of Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 21, 1979, Ser. No. 96,588
Claims priority, application France, Nov. 21, 1978, 78 33160
Int. Cl.³ C08F *4/52, 4/12*
U.S. Cl. 585—525 **8 Claims**

1. A process for the production of liquid polymers comprising polymerizing at least one olefinic hydrocarbon at a temperature from 0° to 90° C., in the presence of a catalyst containing aluminum oxide, boron oxide and halogen, the catalyst containing by weight 0.5 to 20% of halogen and 0.01 to 1 part by

weight of boron oxide per part by weight of aluminum oxide, said catalyst being manufactured by reacting an aluminum compound of formula $AlX_yR_{(3-y)}$, wherein X is halogen, R is a hydrocarbon radical and y is 1, 3/2 with a carrier containing aluminum oxide and boron oxide, the ratio by weight of boron oxide to aluminum oxide being from 0.01 to 1.

4,254,295

OLIGOMERIZATION OF OLEFINS

Samuel A. Tabak, Wenonah, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,591

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—533 **10 Claims**

1. A process for the selective oligomerization of linear and branched chain C_2 to C_{12} olefins which comprises contacting said olefins in the liquid phase with ZSM-12 at temperatures from about 80° F. to about 400° F.

4,254,296

PROCESS FOR THE PREPARATION OF TERTIARY OLEFINS

Giovanni Manara; Vittorio Fattore; Marco Taramasso, and Bruno Notari, all of San Donato Milanese, Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 7, 1979, Ser. No. 46,253

Claims priority, application Italy, Jun. 22, 1978, 24845 A/78

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—640 **10 Claims**

1. A process for the preparation of tertiary olefins starting from the corresponding alkyl-tert.alkyl ethers, characterized in that the tert.alkyl ethers are reacted in the presence of a catalyst selected from the group consisting of a crystalline silica having a high specific surface area corresponding to the general formula $0\text{–}1M_nO_m.\ 1SiO_2$, wherein M_nO_m is the oxide of a metallic cation capable of entering into the silica lattice as a substituent for silicon or as a salt of polysilicic acids and/or an aluminum-modified silica corresponding to the general formula as follows:

$$0.0006\text{–}0.0025Al_2O_3.1SiO_2.$$

4,254,297

PROCESS FOR THE CONVERSION OF DIMETHYL ETHER

Petrus M. G. Frenken, Ed Thorn, and Joseph J. F. Scholten, Sittard, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Nov. 27, 1979, Ser. No. 98,117

Claims priority, application Netherlands, Nov. 30, 1978, 7811732

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—640 **4 Claims**

1. Process for the conversion of dimethyl ether into a mixture of substantially aliphatic hydrocarbons and water by means of a catalyst containing boron, characterized in that dimethyl ether is put in contact, at a temperature of over 250° C., with a catalyst containing boron that consists of a crystalline modification of silica in whose crystal lattice a number of silicon atoms have been replaced by boron atoms.

4,254,298

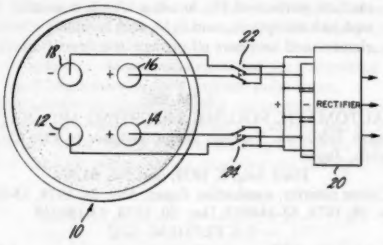
DIRECT CURRENT SMELTING FURNACE

Eivind C. K. Svendsen, Oesteraas, Norway, assignor to Elkem-Spigerverket A/S, Norway

Continuation-in-part of Ser. No. 945,415, Sep. 25, 1978. This application Nov. 9, 1978, Ser. No. 959,317

Int. Cl.[3] H05B 7/144

U.S. Cl. 13—12 1 Claim



1. In an electric smelting furnace comprising a furnace pot adapted to contain a charge to be smelted, the improvement comprising:

(a) at least two pairs of electrodes arranged in said furnace from the top thereof;

(b) a rectifier for supplying direct electric current to said electrodes;

(c) each pair of electrodes being connected in series with the rectifier output wherein one electrode within each pair acts as a cathode and the other acts as an anode; and

(d) switching means, disposed between each said pair of electrodes and said rectifier output, capable of reversing the polarity of each said pair of electrodes, said switching means also being capable of switching the polarity of each said pair of electrodes independently of the switching of at least one other pair of electrodes.

4,254,299

ELECTRICAL SUPERCONDUCTOR

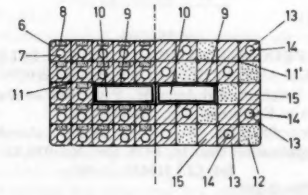
Imre Horvath, Rümlang; Kurt Kwasnitza, Glattbrugg, and Gundolf Meyer, Birmenstorf, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jul. 1, 1977, Ser. No. 812,409

Claims priority, application Switzerland, Aug. 31, 1976, 11016/76

Int. Cl.[3] H01B 12/00

U.S. Cl. 174—15 S 19 Claims



1. A composite electrical conductor comprising a plurality of superconductor assemblies of component conductors adjacent stabilizing conductors, a plurality of said stabilizing conductors being provided with internal cooling passages, with at least one cooling tube located within the composite electrical conductor between at least a portion of said assemblies.

4,254,300

ELECTRIC LAMP

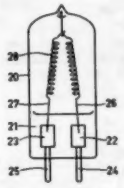
Kathryn C. Thompson-Russell, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,364

Claims priority, application Netherlands, Nov. 29, 1978, 7811684

Int. Cl.[3] H01K 1/38

U.S. Cl. 174—50.64 1 Claim



1. An electric lamp having a glass lamp envelope with a pinch seal in which a molybdenum foil is incorporated as a current lead-through conductor, an external current conductor being welded to one end of the molybdenum foil and an internal conductor to an electric element accommodated inside the lamp envelope being welded to the other end of the molybdenum foil characterized in that yttrium oxide particles are dispersed in the molybdenum foil in a quantity of from ¼ to 1% of the molybdenum weight.

4,254,301

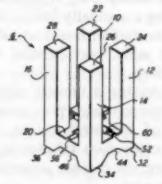
PRINTED CIRCUIT BOARD COMPONENT MOUNTING SUPPORT AND SPACER

Louis J. Serino, Calabasas, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1979, Ser. No. 21,749

Int. Cl.[3] H01B 17/14

U.S. Cl. 174—138 G 5 Claims



1. A printed circuit board component mounting support and spacer having a base **20** with a square face **42**, **44**, **46**, **48** and at least four essentially rectangular feet **32**, **34**, **36**, **38** extending out from said base **20** characterized in that extending upwards from said base **20** are four projecting fingers **10**, **12**, **14**, **16** to cradle an electrical component **8**, between each pair of said upwardly extended fingers **10**, **12**, **14**, **16** are upwardly projecting nibs or projections **52**, **54**, **56**, **58** to contact the bottom of a component **8**, and wherein said base **20** has a hole **60** through which the electrical leads of a component **8** are inserted before inserting the component leads through the appropriate holes in the board.

4,254,302

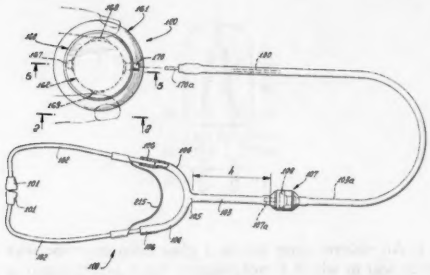
ELECTRONIC STETHOSCOPE

James C. Walshe, 9335 Lubec St., Downey, Calif. 90240

Continuation-in-part of Ser. No. 914,732, Jun. 12, 1978, Pat. No. 4,170,717, which is a continuation of Ser. No. 770,224, Feb. 18, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,828

Int. Cl.[3] **A61B** *7/04*

U.S. Cl. 179—1 ST **6 Claims**



1. In a portable, lightweight, self-contained electronic stethoscope, the combination comprising

(a) a lightweight enclosure containing a speaker,

(b) a housing separate and remote from said enclosure, the housing having upper and lower portions, and an intermediate portion between said upper and lower portions,

(c) a transducer carried by the housing, the transducer including a microphone located to be placed in proximity to a patient's body, the microphone having an exposed diaphragm to acoustically couple to the patient's body, the diaphragm located on said lower portion of the housing,

(d) circuitry in the housing and having an input terminal coupled with the transducer, said circuitry including amplifier means and filter means, and a battery power supply in the housing upper portion and coupled with said circuitry, said circuitry having a first output terminal,

(e) flexible electrical connection means outside the housing and coupling said first output terminal with said speaker, said connection means including a flexible cord,

(f) said circuitry including adjustable means to control the amplitude of the signal transmitted to the speaker, there being a manually controllable part on the housing connected with said adjustable means which includes a potentiometer coupled to said amplifier means, said part projecting from one side of the housing,

(g) said filter means comprising an adjustable low-pass filter means, there being a manually controllable element on the housing and connected with said adjustable low-pass filter means to adjust same, said element being movable between two positions,

(h) said enclosure having a tubular nipple defining only a single acoustic wave outlet port connected to a single flexible tubing of the stethoscope, said single tubing branching to become two tubings at a location spaced from the enclosure, the speaker acoustically facing toward said single outlet port,

(i) said single outlet port being in lengthwise alignment with said single flexible tubing, and said flexible electrical connection means approaching said enclosure in alignment with said outlet port and said single flexible tubing, whereby the enclosure effectively becomes an extension of said single tubing and of said flexible electrical connection means,

(j) the housing intermediate portion having a reduced cross section as compared with said upper and lower portions to provide an interdigitally graspable unit, with said part and said manually controllable element located proximate one another yet projecting in different directions so as to be manipulable by the fingers of the user's hand,

(k) said circuitry including an on-off switch controlled by said part, and including an indicator light on the housing to indicate when the battery power supply output is significantly dropping in value, and also to indicate when the on-off switch is in "ON" position,

(l) the first output terminal being defined by a jack receptable on said intermediate portion of the housing, and said light, said filter manually controllable element and said part are also located on said reduced cross section intermediate portion of the housing which is annular so that said jack receptacle, said light, said manually controllable element and said part all project in different directions.

4,254,303

AUTOMATIC VOLUME ADJUSTING APPARATUS

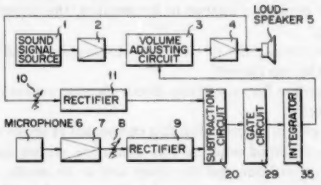
Tetsuya Takizawa, Yamato, Japan, assignor to Viva Co., Ltd., Noda, Japan

Filed Aug. 8, 1979, Ser. No. 64,384

Claims priority, application Japan, Aug. 26, 1978, 53-103385; Nov. 25, 1978, 53-144943; Dec. 20, 1978, 53-156239

Int. Cl.[3] **H03G** *1/02*

U.S. Cl. 179—1 VL **5 Claims**



1. An automatic volume adjusting apparatus comprising:

a volume adjusting device connected between a sound signal source and a loudspeaker;

means for generating a first signal corresponding to the level of a sound signal supplied from the sound signal source to the loudspeaker;

means for generating a second signal corresponding to the level of a composite sound which includes sound generated by the loudspeaker and ambient noise;

means for processing the first and second signals so as to generate a third signal corresponding substantially to only the level of the ambient noise;

means for sampling the third signal at predetermined intervals;

means for holding the output of the sampling means for a predetermined period of time; and

means for controlling, according to the output of the holding means, the level of the sound signal passing through the volume adjusting device.

4,254,304

SIGNAL PROCESSOR FOR USE WITH A TELEPHONE SYSTEM AND A DIGITAL TRANSMISSION LINE

Donald P. Fulghum, and Jerry W. Pate, both of Dallas, Tex., assignors to E-Systems, Inc., Dallas, Tex.

Continuation of Ser. No. 836,756, Sep. 26, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,136

Int. Cl.[3] **H04M** *11/06*

U.S. Cl. 179—2 DP **4 Claims**

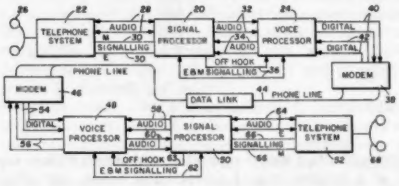
1. A system for encoding telephone dialing signals received from a telephone system at a transmitting station, the encoded telephone dialing signals being transmitted using a digital format of a predetermined data transmission rate to a receiving station via telephone trunk lines for decoding and application to a telephone system interconnected to the telephone trunk lines at a receiving station, the telephone dialing signals having a predetermined data transmission rate other than the predeter-

mined data transmission rate of the digital format, the system comprising:

means for receiving and storing rotary dial pulse telephone dialing signals received from the telephone system at the transmitting station for a predetermined time period;

time translation means for translating the predetermined data transmission rate of the rotary dial pulse telephone dialing signals to time translated rotary dial pulse telephone dialing signals at the predetermined data transmission rate of the digital format, such that the rotary dial pulse telephone dialing signals received from the telephone system at the transmitting station are transmitted to the receiving station in their original pulse form;

said time translation means including circuit means interconnected to said means for receiving and storing and to the telephone trunk lines at the transmitting station for selectively clocking said means for receiving and storing at the



predetermined data transmission rate of the digital format to thereby cause said means for receiving and storing to convert stored rotary dial pulse telephone dialing signals stored in said means for receiving and storing to said time translated rotary dial pulse telephone, dialing signals for transmission to the receiving station;

means connected to the telephone trunk lines for receiving and storing said time translated rotary dial pulse telephone dialing signals from the transmitting station for a predetermined time period at the receiving station; and

circuitry interconnected to said means for storing and receiving and the telephone system at the receiving station for selectively clocking said means for receiving and storing at the receiving station to thereby generate rotary dial pulse telphone dialing signals at the original data transmission rate generated by the telephone system at the transmitting station for application to the telephone system at the receiving station.

4,254,305

CURRENT LIMITED SUBSCRIBER LINE FEED CIRCUIT

Robert Treiber, Long Island, N.Y., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 7, 1979, Ser. No. 9,992

Int. Cl.³ H04B *3/36*

U.S. Cl. 179—16 F **11 Claims**

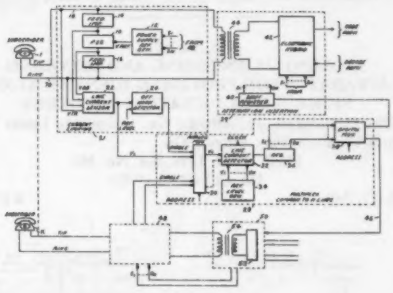
1. An automatic signal equalization circuit for remotely providing an optimized d.c. current to one or more telephone subscriber sets independently of the subscriber loop length and the presence or absence of an equalizer at said subscriber sets comprising:

signal generation means for supplying a regulated d.c. voltage to the telephone tip and ring lines in accordance with a controllable reference voltage signal;

means for sensing the subscriber line current when a subscriber set is in the OFF HOOK condition and for generating a digital logic signal related to the amount by which said sensed line current exceeds a predetermined threshold signal;

means responsive to said logic signal for incrementally varying said reference voltage signal to regulate the d.c. voltage across the tip and ring lines such that said line current is limited to said threshold; and

means responsive to said logic signal for incrementally varying the attenuation in the subscriber loop to optimize the



transmission characteristics of the subscriber loop and telephone subset.

4,254,306

KEY TELEPHONE SYSTEM

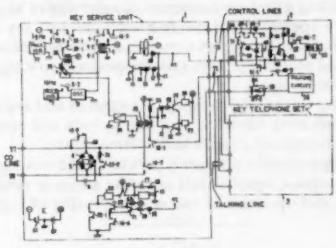
Kouichi Sekiguchi, Asaka, and Toshiichi Takano, Kokubunji, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Continuation of Ser. No. 754,570, Dec. 27, 1976. This application Dec. 6, 1978, Ser. No. 967,017

Claims priority, application Japan, Dec. 26, 1975, 50-156723; Dec. 26, 1975, 50-156724; Dec. 26, 1975, 50-156725; Dec. 26, 1975, 50-156726; Dec. 26, 1975, 50-156727; May 19, 1976, 51-57494; May 19, 1976, 51-57495

Int. Cl.² H04Q *5/20*

U.S. Cl. 179—99 R **17 Claims**



1. A key telephone system comprising:

a key service unit for selectively connecting a plurality of key telephone sets to a C0 line through a talking line;

two control lines connected between each of said key telephone sets and said key service unit;

said key service unit comprising a DC power source having a positive output voltage terminal and a negative output voltage terminal, first detector means connected to one of the two control lines for detecting a first state corresponding to an ON-hook condition of each of said key telephone sets where one of said two output voltages is applied across the two control lines to flow a current of a first predetermined value therethrough, first switch means connected to said DC power source and said first detector for connecting the other of the output voltages across the two control lines in response to the output of the first detector means, second detector means connected to the other of the two control lines for detecting a second state corresponding to an OFF-hook condition of one of said key telephone sets where the other of said two output voltages is applied across the two control lines to flow a

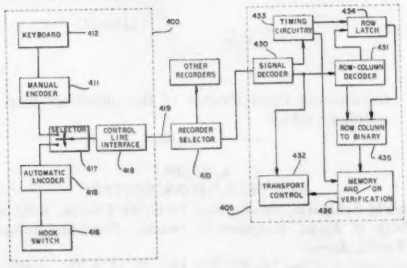
current greater than a second certain value therethrough, and second switch means connected to said second detector means for connecting the talking line to the C0 line in response to the output of the second detector means.

4,254,307

SEQUENTIAL ENCODING AND DECODING APPARATUS FOR PROVIDING IDENTIFICATION SIGNALS TO A DICTATION RECORDER

Luther C. Plunkett, Jr., Atlanta, Ga., assignor to Lanier Business Products, Inc., Atlanta, Ga.

Filed Jan. 2, 1979, Ser. No. 352
Int. Cl.[3] G11B *19/02*
U.S. Cl. 369—26 **4 Claims**



1. In a dictation recording system including a dictate station, a recorder, and operating means associated with said recorder and selectively operative to render said recorder operable by said dictate station for the recording of dictation; the improvement of:

identification means for providing a sequence of identification signals to said recorder, said identification means including a keyboard comprising a plurality of keys selectively operable for providing a plurality of key signals, each of said key signals corresponding to operation of one of said plurality of keys and comprising a row signal and a column signal;

encoding means for providing one signal of said sequence of identification signals in response to each said row signal and in response to each said column signal;

clocking means for alternately providing said row signal and said column signal to said encoding means in response to each said operation of one of said plurality of keys.

4,254,308

VANDAL RESISTANT PUBLIC TELEPHONE

Earle B. Blomeyer, Atlanta; William Q. Watson, Dunwoody, and Charles T. Richardson, Jr., Lawrenceville, all of Ga., assignors to Gladwin, Inc., Oakwood, Ga.

Continuation-in-part of Ser. No. 911,980, Jun. 2, 1978, Pat. No. 4,151,380. This application Apr. 19, 1979, Ser. No. 31,635
The portion of the term of this patent subsequent to Apr. 24, 1996, has been disclaimed.
Int. Cl.[3] H04M *1/12*
U.S. Cl. 179—148 R **14 Claims**

1. A vandal resistant public telephone installation comprising, in combination,

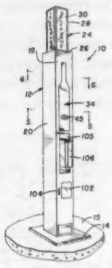
a hollow support extending upwardly from a floor surface and having rigid external walls cooperating to define a closed inner chamber for housing telephone apparatus,

an access opening formed in one wall of said hollow support,

an elongated vertically extending arm member having one end pivotally mounted on said hollow support and moveable between a stored position and an extended position, said arm extending over and substantially closing said access opening when the arm is in the stored position and being pivotally moveable outward to said extended position,

transmitter and receiver means mounted on said moveable arm for movement therewith,

means permitting substantially unobstructed transmission of sound between said transmitter and receiver means and the exterior of said hollow support when said arm is in said extended position to enable a person adjacent the post to use the telephone at different heights above the floor surface adjacent the hollow support,



coin collecting means supported within said hollow support at a location spaced substantially below said telephone instrument,

coin guide means extending between said telephone instrument and said coin collecting means for guiding coins which have been employed to actuate said telephone instrument to said coin collecting means, and

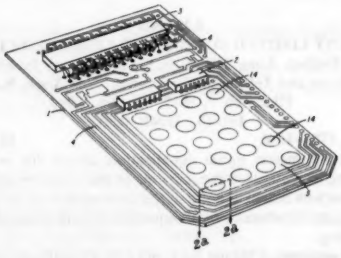
door means in a rigid external wall of said hollow support below said access opening means and providing access to said coin collecting means.

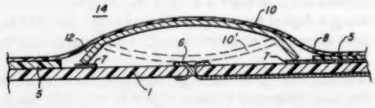
4,254,309

SNAP-THROUGH CHARACTERISTIC KEYBOARD SWITCH

Dudley B. Johnson, Irving, Tex., assignor to Texas Instruments Incorporated, Attleboro, Mass.

Continuation of Ser. No. 678,104, Apr. 19, 1976, abandoned. This application Dec. 18, 1978, Ser. No. 970,505
Int. Cl.[3] H01H *1/06, 13/70*
U.S. Cl. 200—5 A **14 Claims**





11. A keyboard switch comprising:

(a) an essentially planar substrate having a least one major surface of insulating material;

(b) a plurality of first switch contacts affixed to said substrate;

(c) at least one second switch contact affixed to said substrate; and P1 (d) a lead frame having a conductive surface and including a plurality of snap acting actuating elements, each said actuating element being a generally disc-shaped membrane, which includes an electrically conductive major surface connected to said conductive surface of said lead frame, the central portion of said disc-shaped membrane being at least slightly upwardly concave with respect to said conductive surface and connected to said lead frame, the periphery of said disc-shaped membrane having a lip which extends substantially around the entire periphery of said membrane, disposed at an angle to said central portion and defining a truncated cone, the peripheral edge of said lip essentially lying in a plane, said actuating elements being disposed over said first switch contacts and on said substrate, said lead frame being interconnected with said second switch contact making an electrically conductive connection between said second switch contact and said conductive surface of said plurality of actuating elements;

said second switch contact being selectively connectable to said first switch contacts by the conductive surface of said lead frame and said actuating elements disposed over said first switch contacts to provide electrically conductive paths therebetween in response to compressive forces selectively applied between said central portions and said substrate, the force at first increasing with movement of said central portions towards said substrate and then decreasing before said central portions contacts the selected one of said first switch contacts.

14. A snap-action element for use with an essentially planar keyboard, said element comprising a generally disc-shaped, metallic member having an at least slightly upwardly concave surface, the periphery of said member having a continuous lip disposed at an angle to the concave surface of said member, said lip being a portion of a truncated conical surface of revolution.

4,254,310

SUBMINIATURE, MULTI-POLE TOGGLE SWITCH WITH LINEAR SEE-SAW CONTACTS

Francis D. Kirchoff, Waban, and Ralph M. Manning, Winchester, both of Mass., assignors to Alco Electronic Products, Inc., Andover, Mass.

Filed Oct. 1, 1979, Ser. No. 80,199
Int. Cl.³ H01H *19/00*
U.S. Cl. 200—6 R **6 Claims**

1. A multi-pole toggle switch of sub-miniature dimensions, and of the movable see-saw contact type, said switch comprising:

an elongated insulating base;

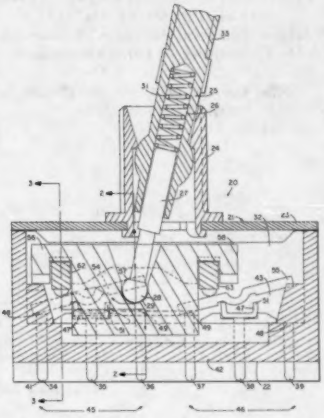
an elongated frame secured to said base;

a toggle lever pivotally supported on said frame with its inner end, inside said switch, arranged to move in a longitudinal path therewithin;

stationary contacts mounted in said base and having terminals extending to the exterior thereof for connection to an external circuit, said contacts arranged in two parallel, linear rows, each row on an opposite side of said path, and each row comprising two sets of said contacts each set including an inboard contact, an outboard contact, and a central see-saw support contact therebetween;

two parallel, linear, rows of movable, see-saw contacts, each row on an opposite side of said path, each see-saw contact seated in one of said central see-saw support contacts and each arranged to be rocked into engagement with either the inboard or the outboard contact of its set to complete electrical connections therebetween;

an elongated actuator block, mounted to slide longitudinally within said switch, said actuator block including two linear, parallel rows of pads, each row on an opposite side of said path and each pad in sliding engagement with one of said see-saw contacts to rockably switch the contacts of its set;



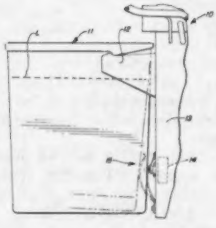
and a spring pressed plunger within said toggle lever, having a tip in contact with the center of said actuator block, said tip transferring spring pressure to said block, thence to said pads and thence to said see-saw contacts.

4,254,311

LIQUID LEVEL CONTROL

George W. Sisk, Jr., Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 14, 1979, Ser. No. 38,573
Int. Cl.³ H01H *35/42*; **F25D** *21/00*
U.S. Cl. 200—61.07 **10 Claims**



1. In an apparatus for collecting liquid having a receptacle for collecting the liquid, pivot means supporting the receptacle for movement thereon in accordance with the weight of liquid collected in the receptacle, support means, and a switch mounted to the support means adjacent the receptacle for actuation as an incident of movement of the receptacle, the improvement comprising:

control means movably mounted on the support means adjacent said receptacle; and

means for causing said control means to be adjustably retained in any one of a plurality of preselected spaced positions on the support means to be engaged by said receptacle and provide selective adjustable resistance to pivotal movement of the receptacle whereby the weight of collected liquid necessary to actuate said switch may be selectively adjusted, said control means being constructed to permit actuation of said switch unimpededly by said receptacle in the event said control means fails to be re-

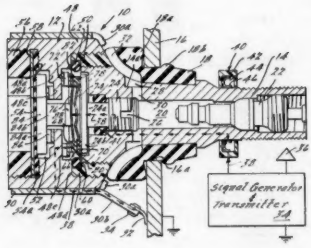
tained in the selected position as by loosening of the mounting of the control means on said support means.

4,254,312

TEMPERATURE COMPENSATED FILL VALVE/PRESSURE SWITCH

Robert S. Migrin, Dearborn, and James M. Brown, Allen Park, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 29, 1978, Ser. No. 974,284
Int. Cl.³ H01H *35/24*
U.S. Cl. 200—61.25 **31 Claims**



1. A device for monitoring fluid pressure within a container, the device comprising:

a body adapted to be positioned adjacent a wall of the container;

switch means disposed within said body, and operative to monitor the fluid pressure within the container and shift from a first state to a second state when the fluid pressure falls below a selected level; and

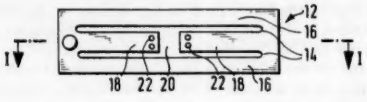
means operative to effect a preselectable temperature compensation characteristic for said device, said compensation means including a sealed prepressurized cavity defined entirely by said body and a compliant wall member operative to substantially vary the volume of said cavity as a function of cavity pressure and container fluid pressure, and engaging said switch means to vary said selected level.

4,254,313

SNAP SWITCH

Helmut Baader, Nabburg, Fed. Rep. of Germany, assignor to Elektromanufaktur Zangenstein Hanauer GmbH & Co., Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,104
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819795
Int. Cl.³ H01H *5/20*
U.S. Cl. 200—67 D **1 Claim**



1. A snap switch comprising

a carrier,

and a snap spring fastened in said housing,

said housing including a base, and a carrier raised above said base, the upper surface of said carrier being essentially flat, said snap spring including

at least one switch contact connected electrically to said carrier by said snap spring,

said snap spring further including a pair of outer arms and a pair of central arms, two parallel longitudinal slots separating said pair of outer arms from said pair of central arms, and a space connecting said longitudinal slots to each other,

said space being arranged substantially halfway along said two longitudinal slots and separating said central arms from each other,

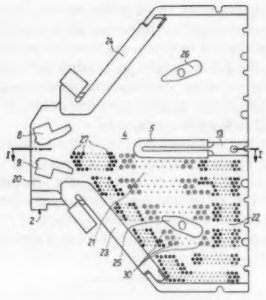
said central arms being under compressive stress, each of said central arms being welded to said upper surface of said carrier with no portion of said carrier projecting into said space separating said central arms, said compressive stress being solely determined by the welded connections of the central arms to the carrier.

4,254,314

ARCING CHAMBER WITH PERFORATED PLATES OF SIEVE-LIKE CERAMICS

Gerd Kummerow, and Günter Prietzel, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 13, 1978, Ser. No. 941,941
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1977, 2741868
Int. Cl.³ H01H *33/08*
U.S. Cl. 200—144 R **5 Claims**



1. An electric arc extinguishing apparatus having an arcing chamber for use in electric power circuit breakers, such as fast-acting DC breakers, comprising:

a pair of quenching plates defining a wedge-shaped arcing space, each quenching plate being of sieve-like ceramic having perforations extending from the arcing space to the outside;

one end of the arcing space comprising a region for receiving arcing electrodes where an arc originates for travel through an arc travel region to a quenching zone, the arc travel region having a first zone next to the region of arc origination and a central zone;

each quenching plate having conical perforations the diameters of which decrease in size from the side of the plate next to the arcing space to the outside; and

each quenching plate being free of such perforations in the region of arc origination, having perforations of a smaller diameter next to the first zone, and having larger perforations next to the central zone.

4,254,315

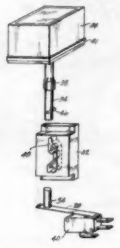
BACK-LIGHTED PUSH-BUTTON SWITCH WITH SAFETY STOP

Curtis R. Stevens, El Toro, Calif., assignor to Master Specialties Company, Costa Mesa, Calif.

Filed Jun. 11, 1979, Ser. No. 47,028
Int. Cl.³ H01H *9/16, 3/12*
U.S. Cl. 200—153 J **9 Claims**

1. A push-button switch assembly comprising: a housing, a

switch mounted in the housing, a push-button projecting from the housing, means including a spring movably supporting the push-button in the housing and biasing the push-button away from the housing, means linking the push-button to the switch for actuating the switch when the push-button is depressed against the spring, said linking means including means disengaged from the push-button by pulling the push-button away from the housing and engaged by pushing the push-button back into the housing, means momentarily locking the linkage to prevent the switch from being actuated when the push-button is reattached to the linkage means by pressing the push-button back into the housing, and means releasing the locking means when pressure applied to the push-button to reattach it to the linkage is removed, said means locking the linkage including a cam member having a groove, a cam follower engaging the groove, means connected to said linkage means for moving the cam follower relative to the cam member in a



first direction in response to movement of the push-button, the cam follower being movable relative to the cam member in a second direction transverse to said first direction, said groove having first and second legs substantially parallel to said first direction, the cam follower moving along said first leg when the push-button is depressed to actuate the switch, means directing the cam follower from the first leg into the second leg when the push button is pulled away from and pushed back into the housing a third leg extending between the first and second legs, the third leg joining the end of the second leg of the groove and forming a stop to block movement of the cam follower in said first direction when it is moved to said end of the second leg by pressing on the push-button during reattachment of the push button was inserted, the third leg intersecting the first leg at an intermediate point, the spring urging the cam follower along the third leg back into the first leg on release of pressure on the push-button.

4,254,316

ELECTRICAL SWITCHING APPARATUS

Walter Landow, Highland Heights, Ohio, assignor to Clark Control, Inc., Cleveland, Ohio

Filed Aug. 30, 1979, Ser. No. 71,228

Int. Cl.[3] H01H *9/08, 9/18, 51/00*

U.S. Cl. 200—308 **12 Claims**

1. Electrical switching apparatus including supporting structure;

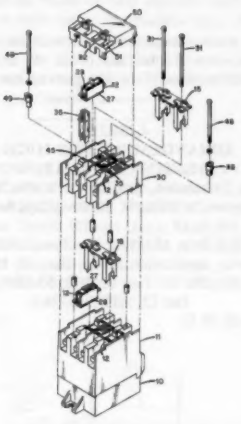
a convertible contact module having first and second contact terminals on the exterior thereof, said convertible contact module being removably mounted in said supporting structure in either of two positions respectively providing normally open and normally closed contact conditions between its contact terminals;

a housing member removably mounted on said supporting structure and overlying said convertible contact module mounted in said supporting structure, said housing member having an aperture therethrough;

a transparent viewing member mounted in said housing member and extending through said aperture, said transparent viewing member having a viewing surface exposed externally of the housing member and an image transmitting surface disposed closely adjacent to said convertible contact module mounted in said supporting structure;

said convertible contact module having a first light reflecting surface area located closely adjacent to said image transmitting surface of the transparent viewing member and being illuminated by light transmitted through the transparent viewing member from the viewing surface thereof when the convertible contact module is in the first of said two positions; and

said convertible contact module having a second light reflecting surface area distinguishable from said first light reflecting surface area, said second light reflecting surface



area being located closely adjacent to said image transmitting surface of the transparent viewing member and being illuminated by light transmitted through the transparent viewing member from the viewing surface thereof when the convertible contact module is in the second of said two positions;

whereby light is transmitted through the transparent viewing member from the viewing surface thereof and the image of the illuminated light reflecting surface area is reflected to the viewing surface thereby providing a visual indication externally of the housing member of the position and consequently the contact conditions of the convertible contact module mounted in the supporting structure.

4,254,317

ACTUATOR WITH ILLUMINATED KEY FOR ELECTRIC SWITCHING DEVICES, PARTICULARLY FOR CONTROL KEYS

Eberhard Schlegel, Durmentingen, Fed. Rep. of Germany, assignor to Firma Georg Schlegel, Durmentingen, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,750

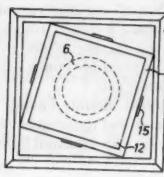
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844579

Int. Cl.[3] H01H *9/18, 9/22*

U.S. Cl. 200—314 **4 Claims**

1. Actuator with illuminated key for electric switching devices, particularly for control-key switches, consisting of a housing which can be inserted into a control panel from the front and can be attached from the back, and of a plunger which is longitudinally displaceable inside the housing against the force of a spring and which is constructed in the shape of a cap for accommodating a signal lamp and is sealed off with respect to the housing, in which arrangement projections, overlapping one another radially and being releasable from one another by means of a rotation, at the housing and at the plunger to lock the latter against falling out forward, charac-

terised in that the plunger (6) is constructed as a closed cap and is secured in the latched angular position by means of an additional plunger cap (16) which can be locked on and is guided in



the housing in a non-rotatable manner, and that the plunger can be rotated between the latched (FIG. 4) and an unlatched (FIG. 3) angular position if the plunger cap has been removed.

4,254,318

DOOR SEAL ARRANGEMENT FOR HIGH-FREQUENCY HEATING APPARATUS

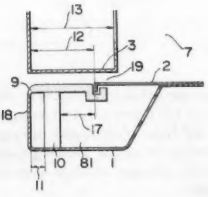
Shuji Ohkawa, Yokohama, and Itsuo Kikuchi, Ibaraki, both of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Japan

Filed Dec. 13, 1978, Ser. No. 969,095

Claims priority, application Japan, Dec. 13, 1977, 52-150321; Dec. 13, 1977, 52-150322; Jan. 9, 1978, 53-966

Int. Cl.³ H05B *6/76*

U.S. Cl. 219—10.55 D **33 Claims**



1. In a high-frequency heating apparatus comprising a heating chamber having an access opening and a door for opening and closing said access opening, a door seal arrangement for preventing leakage of electromagnetic wave energy through a peripheral area of said door, the door and the heating chamber forming a parallel plate transmission line, a plurality of reactance elements of a conductive metal material disposed in the parallel plate transmission line so as to extend along the peripheral area of said access opening thereby forming a series resonance circuit connected in parallel with said parallel plate transmission line, and said series resonance circuit providing a high-frequency electromagnetic short-circuit plane at the disposed location of said reactance elements, whereby the electromagnetic wave energy emerging from within said heating chamber to be incident at an arbitrary incident angle upon said parallel plate transmission line and tending to leap toward an exterior of the high-frequency heating apparatus can be reflected back toward said heating chamber.

4,254,319

PORTABLE MICROWAVE OVEN-TURNTABLE DEVICE

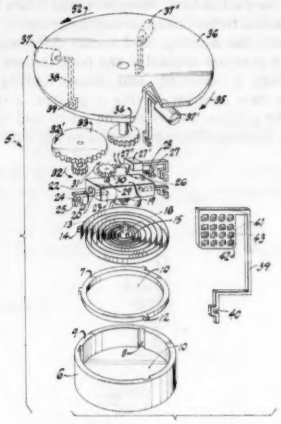
Bruce Beh, and Patricia M. Beh, both of Lloyd La., Huntington, N.Y. 11743

Continuation of Ser. No. 829,723, Sep. 1, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,997

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 F **14 Claims**

1. A portable microwave oven-turntable device comprising a non-metallic drive means for imparting rotary motion to a turntable, and a non-metallic turntable connected to be driven by said non-metallic drive means the non-metallic drive means including a spring, and the non-metallic drive means being further adapted for controlled winding and controlled release of energy, and in which the non-metallic turntable includes turntable means for supporting and for revolving a supported cooking utensil in a substantially horizontal plane and at a predetermined rate of revolutions per minute sufficient to effect proper microwave cooking of a food carried by a supported cooking utensil, said turntable means being connected operatively to the non-metallic spring as to be driven by release of energy therefrom in a wound state, and portable support means for mounting each of said non-metallic drive means and said non-metallic turntable; and the portable support means and the non-metallic drive means and the non-metallic turntable as a unit being of a size and shape adapted for insertion into a microwave oven cooking space and for the support and revolving of food to be cooked in a microwave oven.



4,254,320

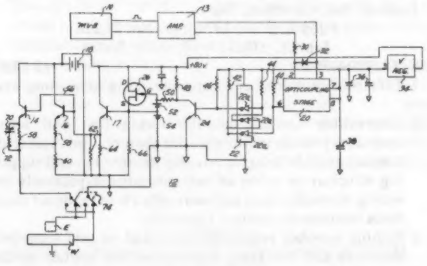
POWER OUTPUT MODULE FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY CIRCUIT

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,048

Int. Cl.³ B23P *1/02*

U.S. Cl. 219—69 C **5 Claims**



1. An output power module for an electrical discharge machining power supply including a pulse generator having a triggering pulse output, comprising:

a power source;

a plurality of electronic output switches having their princi-

pal electrodes operatively connected between said source and gap for providing machining power pulses thereto;

an intermediate FET stage for turning the output electronic switches on and off; and

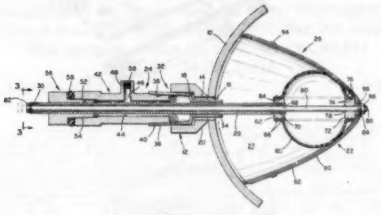
an opti-coupling stage connected intermediate the output of the pulse generator and the FET stage, said FET stage operable as a high input impedance device and having its drain connected to said power source and operable to receive relatively low wattage power pulses on its gate and to convert them to high wattage pulses on its source for operating said output electronic switches.

4,254,321

EXPANDABLE PURGE UNIT

Emerson J. Hallenbeck, 2934 Shoreland Ave., Toledo, Ohio 43611

Filed May 4, 1979, Ser. No. 36,178
Int. Cl.[3] B23K *9/16*
U.S. Cl. 219—72 **11 Claims**



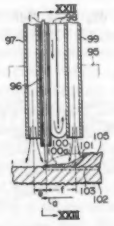
1. A purge unit for establishing an enclosed zone around a weld area, said purge unit comprising an elongate member having a gas supply pipe extending longitudinally thereof, means connected to an end of said gas supply pipe and forming an expandable chamber, a flexible, expandable member having an edge portion adapted to engage the surface of a workpiece around the weld area to establish the enclosed zone, elongate supporting means supported in said gas supply pipe, extending through said expandable chamber means, and affixed to said expandable member, said expandable chamber means urging said expandable member outwardly, when inflated, to form the enclosed zone with said expandable chamber means being within said enclosed zone.

4,254,322

NARROW WELD-GROOVE WELDING PROCESS AND APPARATUS THEREFOR

Isao Asano, Kure, Japan, assignor to Babock-Hitachi Kabushiki Kaisha, Japan

Division of Ser. No. 776,921, Mar. 11, 1977, Pat. No. 4,188,526. This application Feb. 22, 1978, Ser. No. 880,108
Claims priority, application Japan, Mar. 15, 1976, 51/27178
Int. Cl.[3] B23K *9/00*
U.S. Cl. 219—122 **10 Claims**



1. A narrow weld-groove welding apparatus, comprising:

a contact tube and means for advancing said contact tube;

secondary gas supply means for spreading the surface of a molten metal in a molten pool laterally relative to an advancing direction of the contact tube by gas being injected therethrough, said secondary gas supply means including a secondary gas nozzle means positioned in the rear of the contact tube at a first distance from a center longitudinal axis of the contact tube as viewed in the advancing direction of said contact tube and constructed for enabling a free flow of gas therefrom; and

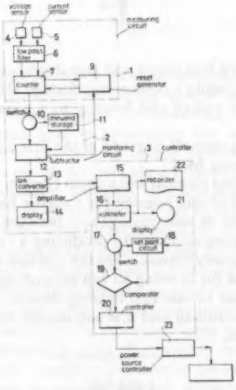
primary gas supply means for pushing back said molten metal in said molten pool relative to said advancing direction by gas being injected therethrough, said primary gas supply means including a nozzle means positioned in close proximity to the front of said contact tube at a second distance from said center longitudinal axis of the contact tube as viewed in said advancing direction, said second distance being less than said first distance, and said primary gas nozzle means being constructed for enabling a free flow of gas therefrom.

4,254,323

APPARATUS FOR MONITORING AND CONTROLLING A WELDING PHENOMENON IN AN ELECTRIC RESISTANCE WELDING

Toshio Takamatsu, Zushi; Hiroyo Haga, Machida; Kazuo Aoki, Kawasaki, and Takeshi Sato, Machida, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,075
Int. Cl.[3] B23K *11/06*
U.S. Cl. 219—110 **17 Claims**



1. An apparatus for monitoring and controlling a welding phenomenon in an electric resistance welding process, comprising:

a welding characteristics counter having an input means for receiving at least one input including a voltage and a current of high frequency which flows in a material to be welded in said process, an oscillator for generating reference time signals, a counting means for counting at least one of the voltage, the current and the reference time signals during a sampling gate time to carry out measurement of at least one welding characteristics value including an oscillating frequency, an oscillating period of said high frequency, and a phase difference between the voltage and current, said welding characteristics value changing in correspondence with the occurrence of periodic fluctuations in the shape of the high frequency welding current circuit formed in the material to be welded, said counter outputting a sampling completion signal after the completion of the sampling gate time;

a reset signal generator means connected to said welding characteristics counter for periodically producing reset

signals and supplying them to said counter in a manner that said counter can perform its counting operation in a stable state, each reset signal causing said measurement of the welding characteristics value to start; and

a monitoring device for receiving and displaying the outputs from said welding characteristics counter and for producing a control signal for use in maintaining optimum welding conditions in the welding process.

4,254,324

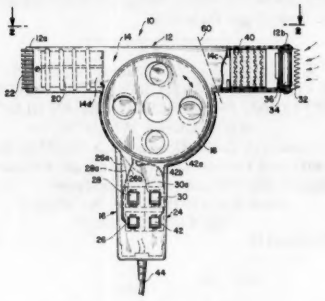
HAIR SINGER AND HAIR DRYER

John Vrtaric, 501 Linden Ave., Woodbridge, N.J. 07095

Filed Oct. 18, 1978, Ser. No. 952,498

Int. Cl.³ A45D *20/08, 20/50*

U.S. Cl. 219—361 **7 Claims**



1. A combined hair singer and hair dryer, comprising:

a housing including a passageway formed therein extending from a first end of said housing to a second end of said housing;

a first heating element disposed at the first end of said housing for drying hair;

a second heating element and a comb element disposed at the second end of said housing for singeing hair;

a fan disposed in said passageway between said first and second heating elements for producing a vacuum effect in said passageway between said fan and said second heating element and for blowing air out through said passageway from said fan to said first heating element; and

means for controlling said first and second heating elements and said fan.

4,254,325

ELECTRIC OVEN TOASTER CONSTRUCTION

Paul V. Snyder, Whitehall, Pa., assignor to General Electric Company, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,724

Int. Cl.³ A47J *37/08*

U.S. Cl. 219—413 **12 Claims**

1. An electric cooking appliance comprising:

(a) wall means, including side walls, forming a chamber having an opening;

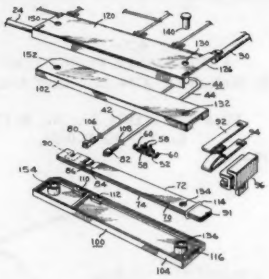
(b) electric heating means mounted in said chamber, said electric heating means being connected to a control circuit for energizing and de-energizing the electric heating means;

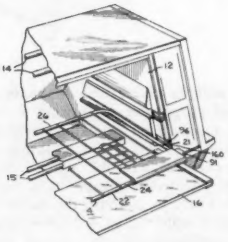
(c) a rack positioned in said chamber;

(d) a temperature sensing device connected to said rack, said temperature sensing device including two output terminals;

(e) a terminal board connected to said rack adjacent to the output terminals, said terminal board including a pair of sheet metal conductors separated from each other by an intermediate layer of insulating material, one of the terminals of said temperature sensing device being connected to one of the sheet metal conductors and the other terminal of said temperature sensing device being connected to the other one of said sheet metal conductors, said terminal board including a portion extending outwardly from said rack;

(f) an electrical receptacle secured to one of said side walls for receiving the outwardly extending portion of said terminal board, said electrical receptacle including a pair of contactors electrically connected to said control circuit





so that one of said sheet metal conductors will be moved into contact with one of said contactors and the other sheet metal conductor will be moved into contact with said other contactor when the terminal board is received by said electrical receptacle whereby said temperature sensing device may be readily inserted within the control circuit of said appliance for controlling energization of the heating means when the rack is inserted within the appliance.

4,254,326

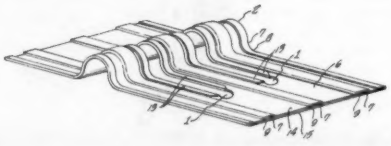
ELECTRICAL HEATER APPARATUS

Jack M. Walker, Portola Valley, and Donald G. Tweed, Mountain View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Aug. 31, 1978, Ser. No. 938,571

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—536 **4 Claims**



1. In an electrical heater apparatus comprised of two metallic foil strips encasing a resistive heating element in laminar style with insulation between said foil strips and resistive heat-

ing element and having terminals for connection to a source of electrical power, an expansion means comprising:

(a) a bend in said metallic foil strips and said resistive heating element perpendicular to the long axis of the resistive heating elements;

(b) a support means of generally the same dimensions as that of said bend and disposed inside said bend between said metallic foil strips and the object to be heated;

(c) means for affixing said support means to the object being heated; and

(d) means for affixing said bend over said support means and to the object being heated.

4,254,327

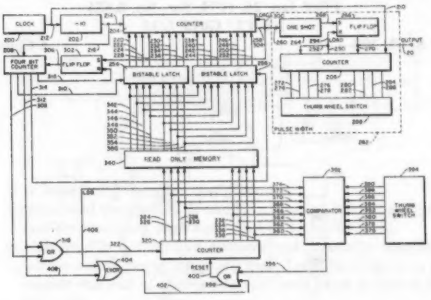
PULSE GENERATOR HAVING SELECTABLE PULSE WIDTH AND PULSE REPETITION INTERVAL

Lawrence A. Beno, Camarillo; John T. Harrell, Newbury Park; Albert B. Evans, Jr., Ventura, and Jay R. Gaudig, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 875,831, Feb. 7, 1978, Pat. No. 4,163,234. This application May 17, 1979, Ser. No. 40,014

Int. Cl.³ H03K *21/36*

U.S. Cl. 235—92 CC **9 Claims**



1. Apparatus for generating pulses having selectable pulse width and selectable pulse repetition interval, comprising:

a. means for generating a clock signal;

b. means responsive to a first control pulse for generating an output pulse of a selectable pulse width, said means for generating an output pulse including,

(1) first flip-flop coupled to respond to said first control pulse, the output of said first flip-flop being set to a first state in response to said first control pulse,

(2) a first counter circuit coupled to the output of said first flip-flop and said means for generating a clock signal, said first counter circuit being enabled by the output of said first flip-flop in response to said first control pulse to count said clock signal;

(3) means coupled to said first counter circuit for presetting the count in said first counter circuit, and

(4) means for resetting the output of said first flip-flop to its second state and for resetting said first counter circuit to said preset count when said first counter circuit reaches a predetermined count, said output pulse being initiated by the output of said first flip-flop going to said first state and terminated by the output of said first flip-flop going to said second state from said first state, the width of said pulse being determined by the preset count in said first counter circuit; and

c. means for generating a series of said first control pulses with the period between said first control pulses being selectable including,

(1) a second counter circuit coupled to said means for generating a clock signal for counting in response to said clock signal, said second counter circuit generating said first control pulse when the count in said second counter circuit reaches a predetermined count, and

(2) means responsive to said clock signal and to said first control pulse for presetting the count in said second counter circuit.

4,254,328

DISPENSING PRESET AMOUNTS OF A PRODUCT

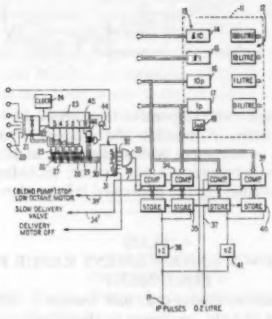
Robert M. S. Murray, and Brian E. Pitches, both of Edinburgh, Scotland, assignors to Ferranti Limited, Cheadle, England

Filed May 31, 1979, Ser. No. 44,329

Claims priority, application United Kingdom, May 31, 1978, 25485/78

Int. Cl.³ G06M *3/02*

U.S. Cl. 235—92 PE **7 Claims**



1. A circuit for controlling the dispensing of a preset amount of a product from apparatus having normal and low rates of delivery and metering means for measuring the quantity of product delivered and/or calculating the monetary value thereof, comprising switching means operable to produce different switch signals for individual preset amounts of material to be dispensed in multiples of a unit amount, counting means responsive to the detection of one of said switch signals to store the number of units represented by the switch signal and operable to change the number stored by one for each unit amount dispensed, storage means for storing the difference between a predetermined amount of product, less than a unit amount, and the unit amount, and comparison means responsive to an indication by the counting means that the final unit of the preset amount is being dispensed to compare continuously the amount of product dispensed in the final unit with the stored difference to provide a signal, when the amounts are equal, to cause the dispensing to be changed from a normal to a slow delivery rate for delivery of said predetermined amount.

4,254,329

MICROFICHE INFORMATION RETRIEVAL AND CONTROL SYSTEM UTILIZING MACHINE READABLE MICROFICHE AND VISUALLY READABLE MICROFICHE

Phillip E. Gokey; Donovan W. Hurlbut; Emma L. Sederholm, and Angel F. Terry, all of Whitewater, Wis., assignors to News Log International Incorporated, Whitewater, Wis.

Filed Oct. 31, 1978, Ser. No. 956,426

Int. Cl.³ G06F *15/30*; G06K *7/10*; G03B *27/08*

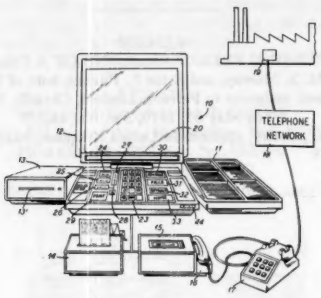
U.S. Cl. 235—379 **28 Claims**

1. Apparatus for reading a microfiche which bears rows of digital information and addresses for the rows of digital information, comprising:

microfiche support means for receiving a digitized microfiche thereon;

an optical sensor for reading the digital information on the microfiche;

transport means mounting one of said support means and sensor for movement one relative the other;
input means for selectively inputting the row addresses;
control means connected between said input means and said



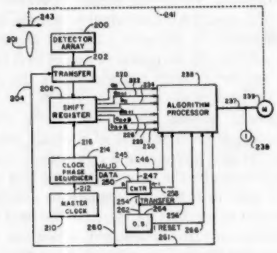
transport means and responsive to an address to cause said transport means to position the addressed row of the microfiche in alignment with said sensor; and
output means connected to said sensor, including display means for displaying the addressed information.

4,254,330

LOW FREQUENCY ENHANCEMENT RANGE FINDING EQUIPMENT

Norman L. Stauffer, Englewood, and Dennis J. Wilwerding, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 13, 1979, Ser. No. 74,845
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 **15 Claims**



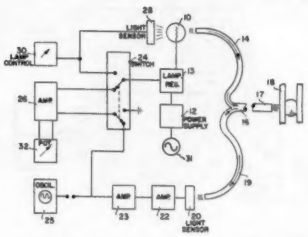
1. Apparatus for use with an auto focus system which includes lens means that produces first and second radiation patterns of a scene, the patterns being similar and in a relative first condition when the lens means is in a proper focus position, in a relative second condition when the lens means is on a first side of the proper focus position and in a relative third condition when the lens means is on a second side of the proper focus position comprising, in combination:
a first group of radiation detectors positioned to receive radiation corresponding to a first portion of the first pattern and to produce a first plurality of output signals in accordance therewith;
a second group of radiation detectors positioned to receive radiation corresponding to a second portion of the first pattern and to produce a second plurality of output signals in accordance therewith;
a third group of radiation detectors positioned to receive radiation corresponding to a first portion of the second pattern and to produce a third plurality of output signals in accordance therewith;
a fourth group of radiation detectors positioned to receive radiation corresponding to a second portion of the second pattern and to produce a fourth plurality of output signals in accordance therewith; and
signal receiving means connected to said first, second, third and fourth groups of detectors to receive the first, second, third and fourth plurality of output signals respectively and to produce a resultant signal representative of the absolute value of the difference between the sum of the first plurality of output signals and the sum of the fourth plurality of output signals less the absolute value of the difference between the sum of the second plurality of output signals and the sum of the third plurality of output signals, the resultant signal having a first characteristic when the patterns are in the relative second condition and having a second characteristic when the patterns are in the relative third condition as an indication of the lens means being on the first or second side respectively of the proper focus position.

4,254,331

CALIBRATION CIRCUIT FOR FIBER OPTIC PROXIMITY INSTRUMENT

Richard A. Dorman, Troy, and Curtis D. Kissinger, Gloversville, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jan. 26, 1979, Ser. No. 6,654
Int. Cl.[3] G01J *1/32*
U.S. Cl. 250—205 **4 Claims**



1. In a fiber optic proximity measuring instrument for measuring the dynamic changes in the gap between a probe tip and a target, including a light source; a reflected light sensor; a fiber optic light conducting cable having light transmitting fibers for transmitting light from said light source to the probe tip, and having light receiving fibers for receiving light reflected from the target and conducting the reflected light to said reflected light sensor; and means for adjusting the intensity of the light entering said light transmitting fibers from said light source; wherein the improvement comprises:
a lamp intensity sensor mounted in light receiving relation to said light source, and connected to a lamp intensity regulator in a set-up mode to control the intensity of said light source in accordance with the setting on a lamp intensity control to calibrate the instrument when it is first installed to establish a predetermined intensity of light received by said reflected light sensor;
automatic light adjusting means for use when the mean gap is held constant during the measurement period, said means having a time constant at least ten times longer than the period of said dynamic changes, and including said light intensity regulator which, in an operating mode, is controlled by said reflected light sensor and is connected to said light source to adjust the mean intensity of the light received by said light sensor to said predetermined value;
said light adjusting means including an adjustable voltage source which provides a reference, with relation to which said regulator maintains the intensity of said light source at a level at which the mean intensity of light received by

said reflected light sensor is substantially equal to said predetermined value;

switch means switchable between said set-up mode wherein said lamp intensity sensor is connected to said regulator during initial installation and calibration, and said operating mode wherein said reflected light sensor is connected to said regulator and said lamp intensity sensor is disconnected from said regulator, whereupon said regulator is controlled by said reflected light sensor;

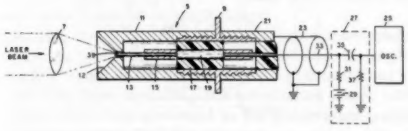
whereby said instrument will automatically adjust for changes in target surface reflectivity and light transmission efficiency by maintaining the mean intensity of reflected light received by the reflected light sensor originally established during set-up, while maintaining accurate measurement of the dynamic changes in said gap.

4,254,332

LASER PULSE DETECTOR

Douglas N. Mashburn, and M. Alfred Akerman, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 13, 1979, Ser. No. 66,107
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 R **5 Claims**



1. A laser pulse detector comprising:

a cylindrical electrically conductive housing having an open end for receiving laser beam pulses to be detected;

an electrically conductive ablative rod coaxially disposed within and adjacent said open end of said housing so as to expose one end of said rod to said laser beam pulses to be detected;

means for removably supporting said rod at its end opposite said one end and providing electrical output connection to said rod separate from said housing; and

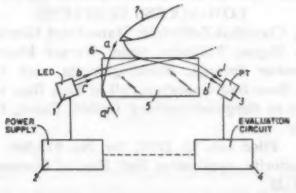
means for providing an electric field between said rod and said housing so that detection of a laser beam pulse is indicated by a pulse produced on said output connection.

4,254,333

OPTOELECTRONIC CIRCUIT ELEMENT

Arne Bergström, Ängsövägen 7, 180 10 Enebyberg, Sweden

Filed May 31, 1978, Ser. No. 911,134
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **13 Claims**



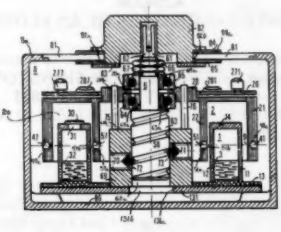
1. An optoelectronic circuit element, particularly a touch key, for effecting a manually controlled output signal comprising at least one radiation-emitting element, a radiation-propagating unit, and at least one radiation-sensitive element, where the radiation-emitting element is arranged to transmit radiation via the radiation-propagating unit to the radiation-sensitive element and the two elements are so positioned in relation to said unit that an identifiable change in the state of the radiation-sensitive element can be induced by means of an external actuating body, preferably a fingertip, wherein the radiation-propagating unit is a solid body, transparent to the radiation used, having a touch surface which is the interface between an optically tenuous, external medium, usually air, and an optically denser medium, preferably glass, in the unit and which surface is exposed to radiation from the radiation-emitting element, wherein said identifiable change in the state of the radiation-sensitive element is induced only when the actuating body is applied in direct contact with said touch surface of the radiation-propagating unit and effected by the change in the conditions for total internal reflection of the radiation at the touch surface on contact, and wherein with respect to the critical angle for total internal reflection at the touch surface, only the radiation transmitted from the radiation-emitting element via the touch surface itself is used for the function of the circuit element, stray radiation penetrating through the touch surface from external sources, or radiation reflected in the actuating body when this body is not in direct contact with the touch surface, being unable to reach the radiation-sensitive element either directly or via refractions or reflections at the interfaces of the radiation-propagating unit.

4,254,334

INCLINOMETER

Raoul Baud, Vevey, Switzerland, assignor to Siemens-Albis, Zurich, Switzerland

Filed Jan. 24, 1979, Ser. No. 6,477
Claims priority, application Switzerland, Feb. 6, 1978, 1264/78
Int. Cl.³ G01C *9/00*
U.S. Cl. 250—231 R **12 Claims**



1. In an inclinometer wherein light barriers are used to measure and monitor an inclincation relative to an artificial horizon which is determined by the specular plane of a liquid contained in a vessel, and wherein a deviation, exceeding an adjustable quantity, in the position of a reference plane of the inclinometer relative to the artificial horizon is capable of triggering an alarm, the improvement which comprises:

said vessel comprising a substantially annular vessel possessing at least partially light-transmissive walls;

said annular vessel possessing an axis of symmetry;

said annular vessel being aligned, with respect to said axis of symmetry, at least approximately at right angles to the reference plane of the inclinometer;

said annular vessel having an internal substantially ring-shaped compartment which is only partially filled with the liquid;

said liquid comprising an at least approximately light impervious, viscous; and

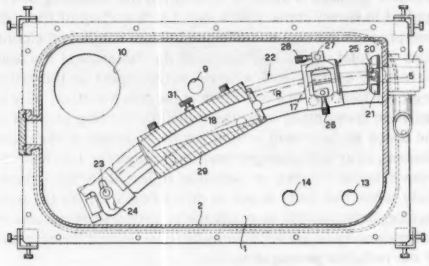
the level of the liquid in the ring-shaped compartment being used for the measuring and monitoring of inclinations.

4,254,335

SPECTROGRAPH-MONOCHROMATOR OF GRAZING INCIDENCE TYPE

Giuseppe Tondello, Padua, and Andrea M. Malvezzi, Milan, both of Italy, assignors to C.I.S.E. Centro Informazioni Studi e Esperienze S.p.A., Italy

Filed Sep. 29, 1978, Ser. No. 947,302
Claims priority, application Italy, Oct. 19, 1977, 28786 A/77
Int. Cl.[3] G01N *23/20;* **G21K** *1/00, 7/00*
U.S. Cl. 250—277 R **7 Claims**



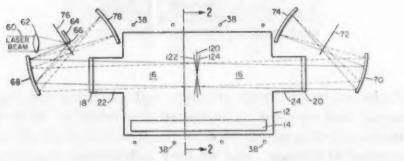
1. A spectrograph-monochromator of grazing incidence type, particularly for soft X-ray and ultraviolet radiation, comprising a base plate and an openable upper cover which define a closed space having vacuum forming means associated thereto, a stationary inlet slit housed in said closed space, a curved guide formed as a portion of a Rowland circle and connected to said base plate through a pivot coaxial with said inlet slit, and a reflecting diffraction grating and a detector which are slidingly mounted on said curved guide and are independently displaceable along the same.

4,254,336

MULTIPASS ILLUMINATION OF AN ELONGATED ZONE

Peter S. Rostler, Arlington, Mass., assignor to Jersey Nuclear-AVCO Isotopes, Inc., Bellevue, Wash.SHINGTON

Filed Mar. 31, 1978, Ser. No. 892,083
Int. Cl.[2] B01D *59/00, 59/46;* **G02B** *17/00;* **F21V** *7/14*
U.S. Cl. 250—294 **33 Claims**



1. A system for providing multipass illumination of a three-dimensional zone extending in an axial direction comprising:

a source of radiation;

means for directing radiation from said source axially into said zone;

means for reflecting said radiation on a plurality of traversals through said zone each succeeding traversal substantially but not completely overlapping the portion of said zone illuminated by the preceding traversal; and

means responsive to radiation passing through said zone after a predetermined number of traversals for inhibiting further passage of said radiation through said zone.

26. A reflective system for providing substantially overlapping multiple traversals of a region to be illuminated by radiation wherein each suceeding traversal of radiation substantially but not completely overlaps the portion of the region illuminated by the preceeding traversal comprising:

first and second reflective systems positioned at opposite ends of said region to be illuminated;

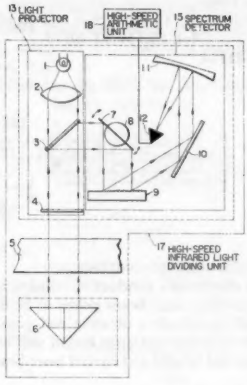
said first and second reflective systems each having respective optical axes associated therewith, the optical axis of one of said reflective systems projected to the other reflecting system forming an angle to the optical axis of said other reflecting system.

4,254,337

INFRARED INTERFERENCE TYPE FILM THICKNESS MEASURING METHOD AND INSTRUMENT THEREFOR

Akitaka Yasujima, Yokohama, and Shingo Ishikawa, Kawasaki, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,555
Claims priority, application Japan, Sep. 4, 1978, 53-107547
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—339 **17 Claims**



1. An infrared interference type film thickness measuring method in which infrared light is irradiated to a polymer film having a thickness of less than 30μ, the infrared light before or after irradiation is spectroscopically scanned within a wavelength range of substantially small absorption by the film, an infrared interference fringe spectrum based on the polymer film is formed, at least the extreme points of the infrared interference fringe are detected by processing, thereby to measure the thickness of the polymer film.

4,254,338

DETERMINATION OF TEMPERATURE DISTRIBUTIONS ON AWKWARDLY LOCATED OR LOW-ACCESS SURFACES

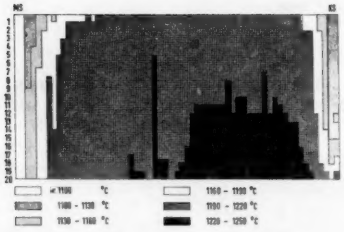
Otto Abel, Clausthal-Zellerfeld; Hans-Josef Giertz, Ratingen; Joachim Hoppe, Mülheim, Saan; Werner Eisenhut, Essen; Bhubaneswar Sarangi, Recklinghausen, and Günter Serwatzky, Bonn-Bad Godesberg, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 12, 1978, Ser. No. 915,066
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816725
Int. Cl.[3] G01J *1/00;* **G01F** *23/00;* **C21D** *11/00*
U.S. Cl. 250—340 **12 Claims**

1. A method of ascertaining the surface temperature distribution over the whole of a surface of interest when the surface of interest is so located as to prevent a temperature-sensitive scanning system from being aimed at such surface perpendicular thereto, the method comprising

scanning the surface of interest using a temperature-sensitive scanning system which is operative for scanning in a first direction along the lengths of successive scan lines, the successive scan lines succeeding each other in a second direction transverse to the first direction, with the temperature-sensitive scanning system during this scanning being aimed at the surface of interest at an arbitrary angle of less than 90° relative thereto, whereby the temperature image of the surface of interest as presented to the temperature-sensitive scanning system is distorted in accordance with the laws of optical perspective; and

processing the output data from the temperature-sensitive scanning system in accordance with said arbitrary angle to form a record of the temperature image transformed into cartesian form simulating the temperature image which would have been presented to the temperature-sensitive scanning system had the temperature-sensitive scanning system been aimed perpendicular to the surface of interest.



4,254,339

METHOD FOR THE FLUORIMETRIC QUANTITATIVE DETERMINATION OF SO_2 IN GASES AND APPARATUS THEREFOR

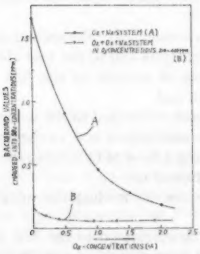
Yoriyuki Urano, Shiga, Japan, assignor to Yanagimoto Seisakusho Co. Ltd., Kyoto, Japan

Filed Jun. 22, 1978, Ser. No. 917,845

Claims priority, application Japan, Jun. 29, 1977, 52-78547; Jul. 22, 1977, 52-88527

Int. Cl.³ G01N *21/38*; G01J *1/58*

U.S. Cl. 250—459 **16 Claims**



1. A method of fluorometrically determining the SO_2 concentration in a sample gas by irradiating said sample gas with ultraviolet rays in an absorption range by SO_2 molecules and measuring the intensity of luminescence of the sample gas caused thereby, said method comprising the steps of:

(i) adding an O_2-supplying gas to a reference gas to increase its O_2 concentration to at least above about 2%, and

(ii) measuring the light intensity from the O_2-supplied reference gas under the same conditions as said sample gas as the value corresponding to a zero or spanned value.

10. A method of fluorometrically determining the SO_2 concentration in a sample gas by irradiating said sample gas with ultraviolet rays in an absorption range and measuring the intensity of the luminescence of the sample gas caused thereby, said method comprising the steps of:

(i) adding O_3 gas to a reference gas to indicate a reference value corresponding to the zero or spanned value for SO_2 concentration, and

(ii) thereafter measuring the light intensities of said sample and reference gases as said reference value and the sample-measured value.

4,254,340

HIGH CURRENT ION IMPLANTER

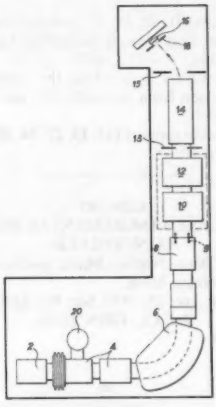
Jean Camplan, Paris; Jacques Chaumont, Fontenay-le-Fleury, and Robert Meunier, Bonnelles, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Continuation-in-part of Ser. No. 886,752, Mar. 15, 1978, abandoned. This application Jan. 8, 1979, Ser. No. 1,691

Claims priority, application France, Dec. 23, 1977, 77 39059

Int. Cl.³ H01J *37/00*

U.S. Cl. 250—492 A **11 Claims**



1. A high current ion implanter of the type comprising in a vacuum enclosure an ion source, means for extracting these ions, scanning means and a sample-carrying target, wherein the scanning means are of the electrostatic type and comprise deflecting plates connected to a variable voltage source and wherein magnetic refocussing means provided with a regulatable source of energizing current therefor is disposed in the vicinity of said plates.

4,254,341

RADIATION PROTECTION DEVICE, PARTICULARLY FOR MEDICAL X-RAY, RADIATION THERAPY AND DIAGNOSTIC USE

Marianne Herr, Eisenhartstrasse 27, D-8000 Müchen 60, Fed. Rep. of Germany, and Stephen H. Frishauf, New York, N.Y., assignors to Marianne Herr, Müchen, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,475

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838519

Int. Cl.³ G21F *3/02*

U.S. Cl. 250—519 **10 Claims**

1. Personal radiation protection device, particularly for X-ray and radiation therapy and diagnosis, in which X-ray or radiation apparatus is installed in a room, and in which a lead

DUE TO A LACK OF PHOTOGRAPHIC CONTRAST BETWEEN TEXT AND BACKGROUND, THIS PAGE DID NOT REPRODUCE WELL.

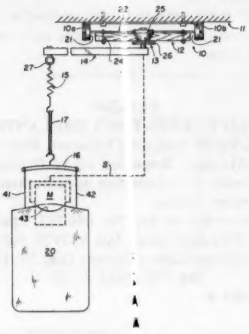
apron (**20**) is worn by the operator personally to protect the operator from radiation,

wherein the improvement comprises

a track system (**10**) secured to the ceiling of the room;

a roller suspension dolly or carriage (**12**) rolling on and suspended in the track system;

a clothes hanger-like apron suspension (**16**) suspended from the dolly and moving with the dolly upon rolling movement of the dolly on the track system;



suspension means (**41, 42; 41', 42'**) suspending the apron (**20**) in its shoulder region from the clothes hanger-like apron suspension (**16**);

and means resiliently suspending the clothes hanger-like apron suspension from the dolly (**12**) including a tension spring (**15**) and

a rotary suspension support (**13; 14, 27; 34, 35, 36**) secured to the dolly or carriage.

4,254,342

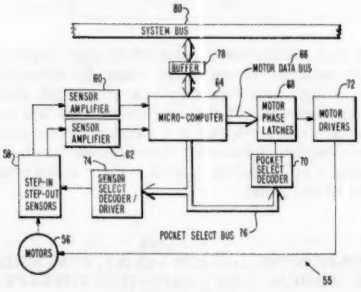
MULTIPLEXED INCREMENTAL POSITION CONTROLLER

Andrew H. McMillan, Wayne, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 27, 1979, Ser. No. 33,963

Int. Cl.[3] **G01N** *21/86*

U.S. Cl. 250—561 **11 Claims**



1. A system for selectively maintaining a predetermined relationship between the size of a document stack and the position of a document retainer within each of a plurality of pockets of a document sorter, comprising:

sensing means responsive to a pocket select signal operative to successively sense the relationship between the size of the document stack and the position of the document retainer within each of the pockets and to provide an output signal corresponding to each of the relationships,

computing means operative to generate said pocket select signal according to a predetermined pattern and to process the output signal and thereby output a control signal, and

driving means responsive to both of the pocket select and control signals, operative to successively position the document retainer of each of the pockets.

4,254,343

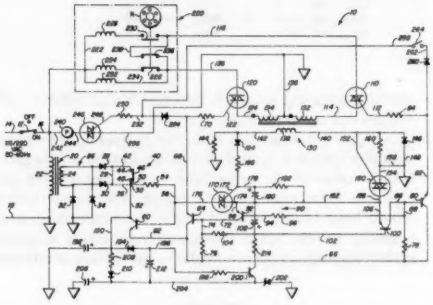
DUAL LOAD CONTROL APPARATUS

J. Vance Miller, 2226 E. Amelia Ave., Phoenix, Ariz. 85016

Filed Aug. 4, 1978, Ser. No. 930,895

Int. Cl.[3] **H02J** *3/14;* **H02P** *1/26*

U.S. Cl. 307—41 **23 Claims**



1. Electrical control means for controlling unequal electrical loads connected to a source of current, comprising, in combination:

a pair of line conductors, including a first line conductor and a second line conductor for providing a source of electrical current;

load means connected to the first line conductor, including

a first electrical load, and

a second electrical load different from the first electrical load;

pilot switch means for controlling the current flow to the load means, including

a first pilot switch connected to the second conductor of the pair of line conductors and to the first electrical load for providing a flow of current to the first electrical load when turned on, and

a second pilot switch connected to the second conductor of the pair of line conductors and to the second electrical load for providing a flow of current to the second electrical load when turned on;

signal switch means for controlling the pilot switch means, including

a first signal switch connected to the first pilot switch for turning the first pilot switch on and off, and

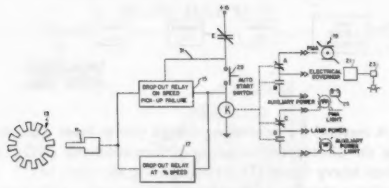
a second signal switch connected to the second pilot switch for turning the second pilot switch on and off; and

a single pole, single throw switch connected to the first line conductor and to the signal switch means and actuable to turn the first signal switch off and to turn the second signal switch on to turn off the first pilot switch to stop the current flow to the first electrical load and to turn on the second pilot switch to provide current flow to the second electrical load.

4,254,344
TURBINE START-UP SWITCH

Thomas A. Fancy, Westminster; Vesa I. Aunio, and John W. Capitao, both of Fitchburg, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Oct. 22, 1979, Ser. No. 86,705
Int. Cl.[3] H01H *35/06*
U.S. Cl. 307—86 7 Claims



1. An electronic switching circuit for supplying electrical power to a prime mover electrical governor wherein one source of electrical power to the electrical governor is an electrical generator driven by the prime mover and the other source of electrical power is an auxiliary power supply to be connected to the electrical governor during prime mover start-up, said electronic switching circuit comprising:

speed pick-up means for tracking prime mover rotor speed;

a first speed detection circuit connected to said rotor speed pick-up for determining a low speed count;

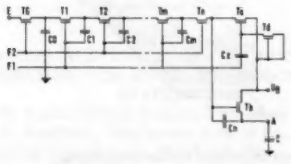
a second speed detection circuit connected to said rotor speed pick-up means for determining a satisfactory rotor speed switching count; and,

a relay connected to the outputs of said first and second circuits whereby either a low speed count or a satisfactory switching count will transfer the electrical power source from auxiliary power to electrical generator power.

4,254,345
OUTPUT CIRCUIT FOR BUCKET-BRIGADE DEVICES

Manfred F. Ullrich, Denzlingen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 21, 1979, Ser. No. 40,828
Int. Cl.[3] G11C *19/28*; H01L *29/78*
U.S. Cl. 307—221 D 1 Claim

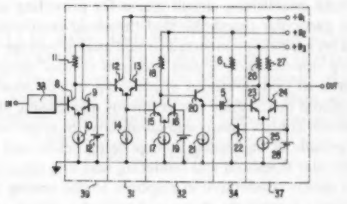


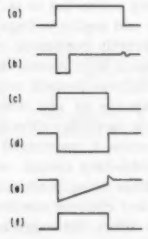
1. An output circuit for bucket-brigade circuits consisting of insulated-gate field-effect transistors (MOS-bucket-brigade devices), consisting of enhancement-type transistors of the same conductivity type (N-channel or P-channel) which are arranged in series with their controlled current paths, with the drain and gate terminals of these transistors each being bridged by a capacitor, and with the gate terminals of the odd-numbered transistors being controlled in common by a first preferably rectangular clock signal, and the gate terminals of the even-numbered transistors, being controlled in common by a second, preferably rectangular, equifrequency clock signal whose effective pulses are lying in the gaps between the effective pulses of the first clock signal, with said output circuit containing a terminating enhancement type transistor of the same conductivity type which, with its controlled current path, is arranged in series with the last delaying transistor of the MOS-bucket-brigade device, with the gate terminal thereof being connected to that particular clock signal to which the penultimate delaying transistor is connected, and whose drain terminal is connected to a constant supply voltage, and containing an output transistor in a source-follower circuit whose gate terminal is connected to the point connecting the last delaying transistor to the terminating transistor, and whose drain terminal is connected to the constant supply voltage, wherein the improvement comprises that the capacitor (Cn) connected to the drain terminal of the last delaying transistor (Tn) is not connected to the gate terminal thereof, but to the source terminal of the output transistor (Tb), that the gate terminal of the terminating transistor (Ta) is connected via an additional capacitor (Cz) to that particular clock signal (F1) to which the penultimate delaying transistor (Tm) is connected, and that the drain terminal of the terminating transistor (Ta), via an enhancement-type transistor (Td) of the same conductivity type, connected as a diode by directly connecting both the drain and the gate terminals, is connected to the gate terminal thereof.

4,254,346
MONOSTABLE MULTIVIBRATOR

Tsuneo Yamada, and Yukihiko Miyamoto, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,639
Claims priority, application Japan, Mar. 15, 1978, 53-29653
Int. Cl.[3] H03K *3/284, 5/01*
U.S. Cl. 307—273 1 Claim





1. In a monostable multivibrator including a gate circuit having first and second inputs, a differentiating circuit responsive to the output of said gate circuit and a voltage comparison circuit responsive to the output of the said differentiating circuit where said gate circuit is adapted to have a trigger pulse applied to said first input thereof and the output of said voltage comparison circuit fed back to said second input thereof,

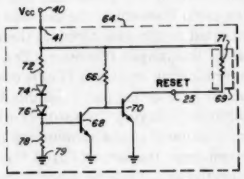
the improvement in said monostable multivibrator of means for setting the reference level of said trigger pulse at said first input lower than the reference level of the output of said voltage comparison circuit fed back to said second input of said gate circuit.

4,254,347

POWER-ON RESET CIRCUIT FOR MONOLITHIC I.C.'S

Kenneth I. Ray, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 1, 1978, Ser. No. 956,759
Int. Cl.[3] H03L 1/00
U.S. Cl. 307—297 3 Claims



1. A reset circuit for providing a digital control signal having a first predetermined magnitude in response to an analog voltage having a magnitude below a second particular threshold and the digital control signal having a second predetermined magnitude in response to the magnitude of the analog voltage being above said second particular threshold, the circuit including in combination:

digital logic means having a control terminal for receiving the digital control signal;

analog voltage supply for providing an analog voltage having an increasing magnitude;

threshold establishing circuit means for providing said second particular threshold, said threshold establishing circuit means being connected to said analog voltage supply;

initially non-conductive first electron control means connected to said threshold establishing circuit means, said threshold establishing circuit means maintaining said first electron control means non-conductive in response to the magnitude of the analog voltage being below said second particular threshold and rendering said first electron control means conductive in response to the analog voltage having a magnitude above said second particular threshold;

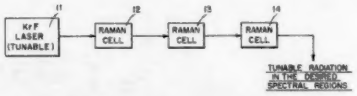
initially non-conductive second electron control means having a control electrode and an output electrode, said control electrode being connected to said first electron control means and to said analog voltage supply, said output electrode being directly connected only to said control terminal of said digital logic means, said initially non-conductive second electron control means being rendered conductive in response to said analog supply voltage being above a first particular threshold while said first electron control means is maintained non-conductive by said threshold establishing circuit, said second electron control means further being rendered non-conductive in response to said first electron control means being rendered conductive when the magnitude of said analog supply voltage goes above said second particular threshold, said second electron control means thereby being initially rendered conductive in response to said analog voltage of increasing magnitude to provide the control signal of the first predetermined magnitude to reset said digital logic means so that said digital logic means is non-responsive to other signals, and said second electron control means thereby being rendered non-conductive to provide said control signal having the second predetermined magnitude in response to the increasing magnitude of said analog voltage rising above said second particular threshold to allow said digital logic means to become responsive to other signals.

4,254,348

TUNABLE ULTRA-VIOLET GENERATOR FOR USE IN THE ISOTOPE SEPARATION OF DEUTERIUM

Eddy A. Stappaerts, Redondo Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 21, 1979, Ser. No. 13,245
Int. Cl.[3] H03F 7/00
U.S. Cl. 307—426 9 Claims



1. A method for generating a high power laser suitable for use in the photopredissociation of formaldehyde (HDCO) to produce heavy water (D_2O) comprising the steps of:

placing a plurality of Raman cells in the path of the beam of a high power krypton fluoride laser,

placing in each Raman cell a gas selected from the class consisting of H_2, HD, D_2 and CH_4,

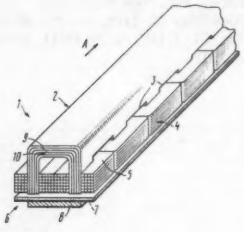
the combination of said gases being such as to shift the wavelength of the beam of said laser to a wavelength in the range of 330–355 nm.

4,254,349

LINEAR INDUCTION MOTOR

Vasily I. Bocharov, pereulok Knizhny, 5; Jury V. Kuprianov, ulitsa Svobody, 11, kv. 11, both of Novocherkassk; Alexandr D. Popov, pereulok Rynochny, 44, and Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, all of U.S.S.R.

Filed Oct. 18, 1978, Ser. No. 952,600
Int. Cl.[3] H02K 41/04
U.S. Cl. 310—13 2 Claims



1. In a linear induction motor comprising:

an inductor,

a secondary element with respect to which said inductor is movable,

a magnetically conductive base of said secondary element,

an electrically conductive part of said second element arranged on said magnetic base,

and a core structure of said inductor; the improvement wherein said core structure of said inductor comprises electrical steel laminations provided with slots, each said electrical steel lamination transversely of said inductor movement having an inverted U-shaped configuration and a varying height and width, each said lamination of larger size encompassing said laminations of smaller size;

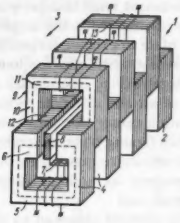
the improvement further comprising a polyphase winding of said inductor enclosed within said slots of said core structure.

4,254,350

ASYNCHRONOUS LINE-FED MOTOR

Vitaly T. Miroshnichenko, ulitsa Oktyabrskaya, 29, kv. 10, Smela Cherkasskoi oblasti; Alexandr D. Popov, prospekt Koroleva, 12, kv. 154; Vladimir A. Solomin, ulitsa Dachnaya, 14, kv. 31, both of Rostov-na-Donu, and Vladimir A. Trofimov, ulitsa Bogdana Khmelnitskogo, 22, kv. 11, Smela Cherkasskoi oblasti, all of U.S.S.R.

Filed Jul. 12, 1979, Ser. No. 57,022
Int. Cl.[3] H02K *41/00*
U.S. Cl. 310—13 1 Claim



1. An asynchronous line-fed motor comprising:
an inductor composed of individual laminated cores which form two rows extending in the direction of travel of the magnetic field;
said laminated cores being formed by rods which are linked by yokes at one end;
said rods of said laminated cores carrying pole shoes at their opposite ends;
a concentrated multiphase winding comprising coils which are wound around said yokes of said laminated cores;
said pole shoes of said laminated cores of the second row interconnecting said laminated cores of the first row, being disposed between said pole shoes of said laminated cores of the first row, immediately next thereto;
said yokes of said laminated cores of the first row facing in one direction;
said yokes of said laminated cores of the second row facing opposite to said yokes of said laminated cores of the first row;
a secondary current-carrying element interposed between said pole shoes of said laminated cores and
said inductor and said secondary current-carrying element being movable relative to each other.

4,254,351

METAL ACETYLACETONATE LATENT ACCELERATORS FOR AN EPOXY-STYRENE RESIN SYSTEM

James D. B. Smith, Wilkins Township, Allegheny County, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 784,752, Apr. 5, 1977, Pat. No. 4,173,593.
This application May 10, 1979, Ser. No. 38,025
Int. Cl.[3] H02K *15/12*
U.S. Cl. 310—45 6 Claims

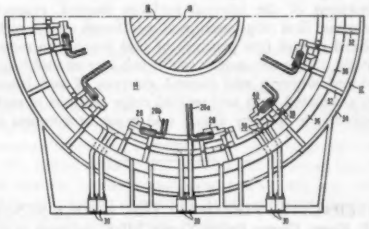
1. An insulated electrical member and a cured body of resinous insulation applied to the member, the insulation comprising a cured resinous composition comprising the admixture of:
(A) an epoxy diester, formed from the reaction of:
(I) 1 part of a mixture of a solid 1,2-epoxy resin having an epoxy equivalent weight of between about 390 and 2,500, and a liquid 1,2-epoxy resin having an epoxy equivalent weight of between about 100 to 385, wherein the weight ratio of solid epoxy resin:liquid epoxy resin is between about 1:1 to 1:10, with
(II) between about 0.01 part to about 0.06 part of maleic anhydride and about 0.0001 part to about 0.005 parts of a catalyst selected from the group consisting of piperidine, pyridine, imidazoles, and aliphatic tertiary amines, and mixtures thereof; to form an epoxy diester having an acid number between about 0.5 to 3.0; with
(B) between about 0.05 part to about 3.0 parts of a vinyl monomer co-reactive with the epoxy diester; about 0.0003 part to about 0.004 part of a room temperature stabilizer selected from the group consisting of catechol, cresylic acid, dinitrophenols, trinitrophenols, aromatic quinones, and mixtures thereof; between about 0.3 part to about 1.2 parts of a polycarboxylic anhydride which is soluble in the epoxy diester-vinyl monomer-stabilizer mixture at temperatures of between about 0° C. to 35° C.; and an amount of a free radical catalyst selected from the group consisting of azo compounds, peroxides, and mixtures thereof, that is effective to provide a catalytic curing effect on the mixture at a temperature of over about 85° C.; and
(C) between 0.0005 part to 0.005 part of a metal acetylacetonate, selected from the group consisting of sodium (I) acetylacetonate, zinc (II) acetylacetonate, chromium (III) acetylacetonate, manganese (III)acetylacetonate, ferric (III) acetylacetonate, aluminum (III) acetylacetonate, uranyl (VI) acetylacetonate, and mixtures thereof, acting as the latent accelerator; to provide an epoxy-vinyl solventless, liquid composition, having a viscosity of between about 5 cps to 500 cps at 25° C.

4,254,352

PARALLEL RING AND RING EXTENSION SUPPORT SYSTEM FOR DYNAMOELECTRIC MACHINES

Frank P. Fidei, Forest Hills Boro; Michael Saviski, White Oak Boro, and Andrew J. Jarabak, Murrysville Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1979, Ser. No. 16,244
Int. Cl.[3] H02K *11/00*
U.S. Cl. 310—71 7 Claims



1. A dynamoelectric machine comprising:
a cylindrical stator core;
a stator winding distributed on said core, said winding having a plurality of phase terminals disposed on at least one axial end of said stator core at a plurality of discrete radial distances from said stator core's axis;
a casing structure surrounding said stator core;
a plurality of conductor ring structures having conductor rings of predetermined arcuate length disposed about said stator core at one axial end of said stator core and ring extensions radially and axially extending from said conductor rings;
a plurality of phase lead groups, said groups each including a plurality of phase leads for electrically connecting said terminals and said ring extensions, said phase leads of each group being equal in length, said number of groups being equal to the number of discrete radial terminal distances;

a plurality of conductor ring clamp systems for supporting said conductor rings at selected circumferential locations, said conductor ring clamp systems being connectable to said casing structure; and

a plurality of ring extension clamp structures for supporting said ring extensions, said ring extension clamp structures being connectable to said conductor ring clamp systems.

4,254,353

BRUSH HOLDER

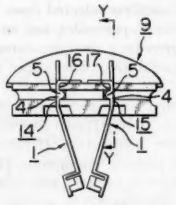
Shinich Matsuda, Abiko, Japan, assignor to Mabuchi Motor Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,856

Claims priority, application Japan, Oct. 19, 1977, 52/140293[U]

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **13 Claims**



1. A brush holder for holding a brush opposite to and in contact with a motor commutator, which comprises: a brush arm made of conductive and resilient material and including a brush support having a brush at its tip and a brush arm base having a first ridge section; an insulating brush arm mount provided with slits extending from a front edge portion thereof, first grooves provided in the vicinity of the central portions of said slits respectively, and second grooves provided along the side edge portions thereof and extending from the front edge portion thereof, said brush arm being removably mounted on said brush arm mount; and a case provided with a base having a bearing section for supporting a motor shaft, and sides having second ridge sections in the vicinity of the upper end portions of the internal surfaces thereof, respectively; wherein said first ridge section of said brush arm is resiliently positioned in said first grooves of said brush arm mount, respectively, to thereby mount said brush arm on said brush arm mount and wherein said second grooves of said brush arm mount are mated with said second ridge sections of said case, respectively, to thereby attach said brush arm mount to said case.

4,254,354

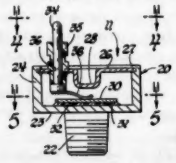
INTERACTIVE PIEZOELECTRIC KNOCK SENSOR

John E. Keem, Grosse Pointe Farms, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 53,843

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—329 **2 Claims**



1. An engine knock sensor adapted to be mounted on a component of a multicylinder, internal combustion engine capable of generating knock-induced vibrations at frequencies which may differ slightly from cylinder to cylinder and respond interactively with at least a portion of said component to knock vibrations from all the different cylinders, comprising, in combination:

a flexing plate adapted to execute plate vibrations in a plurality of modes;

a substantially rigid mounting stud affixed to and extending substantially perpendicularly from the flexing plate and adapted for threaded attachment to the engine component;

a cover affixed to the flexing plate about its periphery for unitary movement with said periphery and having a mass adapted to interact with the engine component through the flexing plate to execute interactive resonant vibrations therewith over a substantial frequency range at least equal to the range of varying frequencies characteristic of knock vibrations of all the different cylinders, the mass of the cover having a center not corresponding with the center of mass of the flexing plate, whereby the cover and engine component vibrate resonantly through the flexing plate in modes transverse as well as axial with respect to the mounting stud; and

a piezoelectric element attached to the flexing plate under the cover, the element covering a substantial portion of the flexing area of the flexing plate and being thereby effective to flex therewith and generate an electrical output signal in response to the axial and transverse resonant vibrations of the sensor with the engine component, the sensor thereby being capable of exhibiting resonant response to knock vibrations for all cylinders of a multicylinder engine and generating a strong output signal in response thereto.

4,254,355

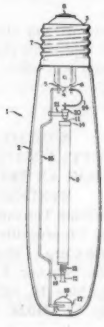
CERAMIC ARC TUBE MOUNTING

William L. Taylor, East Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 11, 1978, Ser. No. 941,566

Int. Cl.³ H01J *5/48, 61/30*

U.S. Cl. 313—25 **7 Claims**



1. A high intensity discharge lamp comprising:

an outer vitreous envelope having a pair of lead-in conductors sealed into it at the stem end,

an inner tubular ceramic envelope having closures sealing its ends and containing an ionizable medium, and inleads extending from said closures and making connections to electrodes within said inner envelope, one of said inleads being a wire extending substantially on axis,

a metal support rod extending within said outer envelope, said rod being attached to one of the lead-in conductors at the stem end,

a connector providing a rigid connection between the other inlead and said support rod, and an insulating bushing

supported from said support rod and having a hole therethrough through which said axial wire inlead slideably extends, said bushing allowing axial freedom but providing lateral restraint to said wire inlead, and a flexible conductor extending from said wire inlead to said other lead-in conductor, said flexible conductor providing an electrical connection without appreciable mechanical restraint on said wire inlead.

4,254,356

INLEAD AND METHOD OF MAKING A DISCHARGE LAMP

John J. Karikas, Shelby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,168

Int. Cl.³ H01J *9/32, 61/06, 61/36*

U.S. Cl. 313—217 **13 Claims**

1. An electrode-inlead assembly for sealing into an envelope of high temperature vitreous material comprising a longitudinally extending thin refractory metal foil portion joined to a thicker conductor supporting an electrode at its distal end, said foil portion being stiffened by reversely folded lateral edges which overlap the region of greater stiffness where the thicker conductor joins the foil portion.

4,254,357

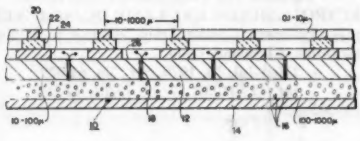
MULTI-ARRAYED MICRO-PATCH EMITTER WITH INTEGRAL CONTROL GRID

George A. Haas, Alexandria, Va.; Richard E. Thomas, Riverdale, and Richard F. Greene, Bethesda, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 14, 1979, Ser. No. 75,630

Int. Cl.³ H01J *1/88, 19/42*

U.S. Cl. 313—268 **9 Claims**



1. An electron-emitter cathode assembly with an integral control grid which comprises:

a container for low-work-function material having a porous metal top serving as a cathode, the low-work-function material being dispensed from the pores to the cathode when the container is heated to provide an array of low-work-function electron-emitting areas centered at the pores; and

an insulated grid disposed on the porous metal top of the container and having a plurality of openings, each opening being aligned with a single respective pore to control electron emission from the respective low-work-function electron-emitting area centered at the pore and to contain the spread of low-work-function material,

the grid being made of a material to which the low-work-function material will not adhere at operating temperatures.

8. A method of forming an electron-emitter cathode assembly with an integral control grid comprising the steps of:

forming a container for low-work-function material;

providing a porous metal top for the container to serve as a cathode, the low-work-function-material being dispensed from the pores to the cathode when the container is heated to provide an array of low-work-function electron-emitters areas centered at the pores;

disposing on the porous top of the container an insulated grid having a plurality of openings, the grid being made of a material to which the low-work-function material will not adhere at operating temperatures;

aligning each opening with a single respective pore to control electron emission from the respective low-work-function electron-emitting area centered at the pore and to contain the spread of low-work-function material.

4,254,358

INCANDESCENT LAMP

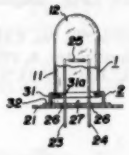
Sozo Saito, Tokyo, Japan, assignor to Kondo Sylvania Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,572

Claims priority, application Japan, Sep. 25, 1978, 53-131576[U]; Sep. 25, 1978, 53-131577[U]

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 **5 Claims**



1. An incandescent lamp comprising:

a bulb formed of light-transmissible material;

a stem portion hermetically supporting lead-in wires having connected to ends thereof a filament; and

connector means for connecting said bulb and said stem portion in hermetically sealed fashion, said connector means comprising a member having a first end hermetically joined to said stem portion and a second end having an annular recess receiving an end of said bulb and hermetically joined thereto by fused glass powder substantially filling said annular recess.

4,254,359

CAMERA TUBE WITH GRADUATED CONCENTRATION OF TELLURIUM IN TARGET

Petrus J. A. M. Derks; Joannes H. J. Van Dommelen, and Jan Dieleman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,260

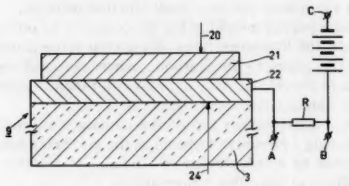
Claims priority, application Netherlands, May 19, 1978, 7805417

Int. Cl.³ H01J *29/45, 31/38*

U.S. Cl. 313—386 **6 Claims**

1. A camera tube comprising an electron source and a target, said target having a radiation receiving side and a side to be scanned by an electron beam emanating from the electron source, said target comprising a signal electrode on the radiation-receiving side adjacent a selenium-containing vitreous layer on the side to be scanned by the electron beam, said

selenium-containing layer further comprising arsenic, characterized in that the selenium-containing layer further comprises tellurium in a concentration which increases from the radiation-receiving side to the side to be scanned by the electron beam in such manner that over a distance of at most 0.3 mi-



crons from the radiation-receiving side of the selenium-containing layer the concentration reaches a value of at least 4½ atomic %, the tellurium concentration thereafter not decreasing in the selenium-containing layer, and the arsenic concentration uniformly exceeds 1½ atomic %.

4,254,360

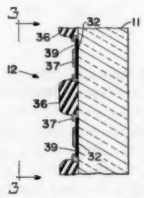
INSULATED WEB COLLECTOR STORAGE TARGET FOR A CATHODE RAY TUBE

Duane A. Haven, Banks, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 6,146, Jan. 24, 1979, abandoned. This application Apr. 8, 1980, Ser. No. 138,471

Int. Cl.[3] **H01J** *29/39, 31/08*

U.S. Cl. 313—395 **12 Claims**



1. A bistable storage target for a cathode-ray tube, comprising

a support surface of electrically insulative material,

a layer of conductive material disposed on said surface, said conductive layer including a plurality of openings forming a first aperture pattern,

a storage layer of secondary electron emissive material in contact with said support surface, said layer comprising a multiplicity of spaced deposits of such material including one within each opening of said first pattern, and

a layer of insulating material overlying said conductive layer, said insulating layer including a like plurality of openings forming a second aperture pattern substantially in register with said first pattern, the individual openings of said second pattern being smaller in size than the corresponding openings of said first pattern, with portions of said insulating layer engaging regions of said support surface surrounding each deposit of storage material thereby to insulate said deposits from said conductive layer.

4,254,361

MULTI-DIGIT DISPLAY APPARATUS

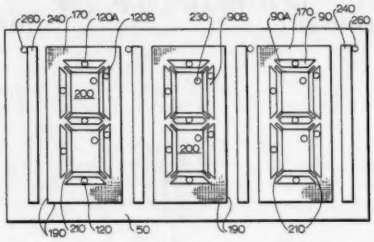
Saul Kuchinsky, Somerville, N.J.; Roger W. Wolfe, San Diego, Calif.; Thomas C. Maloney, Bernardsville, and William M. Hennessey, Somerville, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 391,373, Aug. 24, 1973, Pat. No. 3,903,448, which is a continuation of Ser. No. 188,485, Oct. 12, 1971, abandoned, which is a continuation of Ser. No. 870,678, Oct. 27, 1969, abandoned. This application Mar. 3, 1975, Ser. No. 554,595

The portion of the term of this patent subsequent to Sep. 9, 1992, has been disclaimed.

Int. Cl.[3] **H01J** *17/49, 61/067;* **H01J** *61/66*

U.S. Cl. 313—519 **5 Claims**



1. A multi-digit display apparatus comprising

an electrode board having a plurality of display sections and a transparent plate which is transparent at least for portions facing the individual display sections, said transparent plate and electrode board being stacked, the stack being hermetically sealed around the periphery thereof,

said electrode board carrying a plurality of cathode elements arranged in digit-8 groups for the individual display sections, and

anodes formed in portions surrounded by the individual cathode elements and in portions surrounding the individual cathode elements for each said digit-8 group,

said anodes being commonly connected in each said display section and to a terminal for each said display section and corresponding cathode elements in each said display section being electrically connected with each other and to a terminal for each said element,

the total area of the anodes in each display section being greater than the total cathode area in that section.

4,254,362

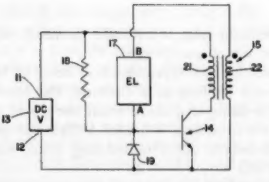
POWER FACTOR COMPENSATING ELECTROLUMINESCENT LAMP DC/AC INVERTER

Harry W. Tulleners, Urbana, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jul. 30, 1979, Ser. No. 61,929

Int. Cl.[3] **H05B** *37/02, 39/04, 41/36*

U.S. Cl. 315—219 **25 Claims**



1. A power factor compensating DC to AC inverter circuit which comprises:

a direct current voltage source;
an electroluminescent lamp;
a single switching device having an input, an output and a controller side;
a transformer having a primary winding and a secondary winding, the primary winding being in series with the first terminal of the direct current power source and the input to the switching device, the output of the switching device connected to the second terminal of the direct voltage source, the secondary winding being in series with the electroluminescent lamp and the controller side of the switching device, the secondary winding having an end opposite the controller side of switching device connected to the output line of the switching device so that the secondary winding doubles as both an output and a feedback winding and the electroluminescent lamp doubles both as a load and limiting impedance for the controller side of the switching device.

4,254,363

ELECTRODELESS COUPLED DISCHARGE LAMP HAVING REDUCED SPURIOUS ELECTROMAGNETIC RADIATION

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Dec. 22, 1978, Ser. No. 972,402
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 **31 Claims**

1. An electrodeless discharge lamp comprising
a sealed envelope having a substantially toroidal shape with an internal and an external surface,
an ionizable medium within said envelope for emitting radiant energy when subjected to an alternating current field at or about radio frequency,
means for supplying alternating current, and
first means adjacent the interior surface and second means adjacent the external surface of the envelope, each coupled to said energy supplying means and producing an alternating current field which reacts with the medium in the envelope, and
said first and second means producing alternating current fields which are at least partially opposing for confining the alternating current field to the area adjacent the envelope.

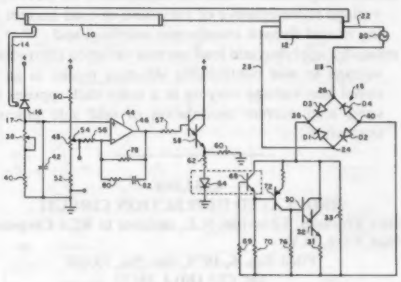
4,254,364

LAMP REGULATOR CIRCUIT FOR ROTARY CAMERA

John R. Flint, Barrington; Karavattuveetil G. Rabindran, Morton Grove, and Jerry W. Clevenger, Hanover Park, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 4, 1979, Ser. No. 36,192
Int. Cl.³ G05F *1/00*; H05B *41/39, 41/392*
U.S. Cl. 315—311 **5 Claims**

1. A voltage regulator for regulating the magnitude of voltage an electrical source of power applies to a ballast of a fluorescent lamp, comprising:
a rectifier bridge circuit having a pair of input bridge junctions and a pair of output bridge junctions;
means for connecting the ballast circuit, the source of power, and the pair of input bridge junctions in series;
a variably conducting shunt circuit connected to the second pair of bridge junctions, the shunt circuit having a relatively high impedance leg connected across the pair of



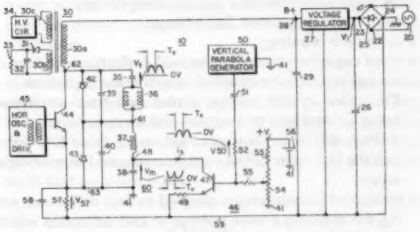
output bridge junctions and a relatively low impedance leg connected across the pair of output bridge junctions;
a variable current device connected into the relatively low impedance leg of the shunt circuit; and
means for controlling the flow of current through said variable current device inversely in accordance with the intensity of illumination from the fluorescent lamp.

4,254,365

SIDE PINCUSHION CORRECTION MODULATOR CIRCUIT

Peter R. Knight, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,840
Int. Cl.³ H01J *29/70*
U.S. Cl. 315—371 **5 Claims**



1. A deflection circuit with side pincushion correction, comprising:
a deflection winding;
a trace capacitance coupled to said deflection winding;
first switching means for applying a trace voltage to said deflection winding for generating a deflection trace current in said deflection winding;
a modulator inductance;
a modulator capacitance coupled to said modulator inductance;
second switching means for applying a modulator voltage to said modulator inductance for generating a sawtooth modulator current in said modulator inductance;
a source of operating voltage;
means including a flyback transformer winding coupled to said source of operating voltage for charging said trace and modulator capacitances to develop said trace and modulator voltages;

controllable shunting means coupled to one of said trace capacitance and said modulator capacitance and responsive to bias voltages for developing a shunt current to control said trace and modulator voltages;

means for applying to said controllable shunting means a vertical rate bias voltage for varying said shunt current at a vertical rate to provide side pincushion correction;

means independent of said one capacitance for developing a voltage representative of variations of load current flowing in said flyback transformer winding; and

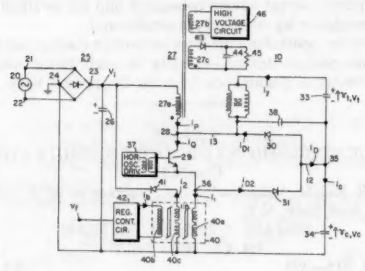
means for applying said load current variation representative voltage to said controllable shunting means as an additional bias voltage varying in a sense that opposes undesired load current modulation of said side pincushion correction.

4,254,366

REGULATED DEFLECTION CIRCUIT

Walter Truskalo, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1979, Ser. No. 73,040
Int. Cl.³ H01J 29/70
U.S. Cl. 315—400 **7 Claims**



7. A regulated deflection circuit, comprising:

a source of unregulated DC voltage;

a deflection winding;

a trace capacitance coupled to said deflection winding;

a second capacitance coupled to said trace capacitance, the DC value of the voltage across said trace capacitance being constrained to assume a value representative of the voltage difference between said unregulated DC voltage and the DC value of the voltage across said second capacitance;

a horizontal output device coupled to said deflection winding for applying a trace voltage to said deflection winding to generate a trace deflection current in said deflection winding;

means including a flyback transformer winding coupled to said source of unregulated DC voltage and to said horizontal output device for charging said second capacitance from said source through said horizontal output device;

a controllable inductance capable of being varied in effective inductance value;

switching means coupled to said horizontal output device, controllable inductance and second capacitance for periodically applying the voltage developed across said second capacitance to said controllable inductance in order to establish a capacitance charge altering current in said controllable inductance; and

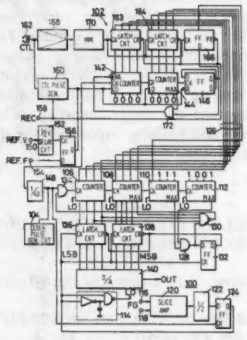
means responsive to a quantity within said deflection circuit for varying the effective inductance value of said controlled inductance in order to control said charge altering current in said inductance in a sense opposing undesired variations in said quantity.

4,254,367

DIGITAL SERVO CIRCUIT

Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 11, 1979, Ser. No. 2,808
Claims priority, application Japan, Jan. 17, 1978, 53-2708; Jan. 17, 1978, 53-2709
Int. Cl.³ H02P 5/16
U.S. Cl. 318—314 **7 Claims**



1. A digital servo circuit for controlling the velocity and phase of a moving member which is driven by an electric motor, said servo circuit comprising:

means for generating a reference clock signal;

means for generating a first pulse signal having a repetition rate that varies in accordance with the velocity of said moving member;

n-bit presettable counter means for counting said reference clock signal during an interval corresponding to said repetition rate of said pulse signal;

latch means for latching an output of the m least significant bits of said counter means, where m is less than n;

control means for controlling said m-bit output from said latch means so as substantially to hold the latter output at a minimum level when the n-bit count of said counter means is less than a first predetermined value and at a maximum level when said n-bit count of said counter means is more than a second predetermined value; and

means for converting said m-bit output from said latch means to a corresponding analog signal with which to control the rotation of said motor.

4,254,368

APPARATUS FOR DRIVING A MOTOR

Satoshi Ido, Tokorozawa; Nobuo Hamamoto, and Kazuo Ichino, both of Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of, Japan

Filed Jan. 17, 1980, Ser. No. 112,747
Claims priority, application Japan, Jan. 29, 1979, 54/8232
Int. Cl.³ H02P 5/16
U.S. Cl. 318—603 **7 Claims**

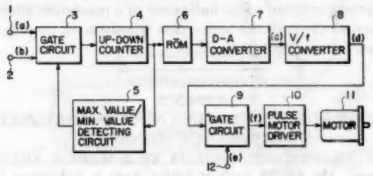
1. In an apparatus for driving a motor wherein a stage carrying a sample thereon is located and moved to a predetermined position in accordance with a selected speed characteristic including a function for slow-up and slow-down of the speed at the start and prior to the stopping of the motor, respectively, the improvement comprising:

circuit means to provide a preset stage movement command signal, a control command signal shorter than said preset stage movement command signal by a predetermined slow-down time interval and a clock signal for determining slow-up and slow-down times;

counting means responsive to said control command signal

and said clock signal for counting in an "up" direction at a logical "1" level of said control command signal and in a "down" direction at a logical "0" level of said control command signal to produce a sequence of address signals;

memory means for storing a speed control function of arbitrary characteristic shape in the form of a succession of digital values and for reading out said values in response to the output address signals of said counting means;



converting means for converting the digital output of said memory means to a pulse train signal whose frequency varies in accordance with the digital values;

gate circuit means for effecting an AND operation between said pulse train signal and said stage movement command signal; and

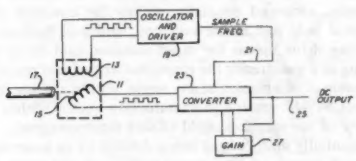
driving means to drive said motor with an output signal obtained by said AND operation.

4,254,369

HIGH ACCURACY SHAFT ANGLE LINEAR DC VOLTAGE CONVERSION USING LOW ACCURACY DEVICES

James J. Duckworth, Parsippany, and David J. Simon, Saddle Brook, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Nov. 13, 1978, Ser. No. 959,822
Int. Cl.[3] G05B *1/06*
U.S. Cl. 318—654 **7 Claims**



1. A method of exciting and demodulating a synchro having an input winding and an output winding, the voltage of the output winding be proportional to a shaft position comprising:

a. generating a square wave having a frequency which is eight times the desired excitation frequency;

b. dividing said frequency in a Johnson counter so as to develop eight outputs each of which is present, in sequence, only for one period of the generated square wave;

c. developing from outputs of said counter a signal having a 50% duty cycle and having a period eight times that of the originally square wave;

d. buffering and amplifying said signal and coupling said signal to the synchro input winding;

e. sampling the output of the synchro over the time during which the third output of the counter appears; and

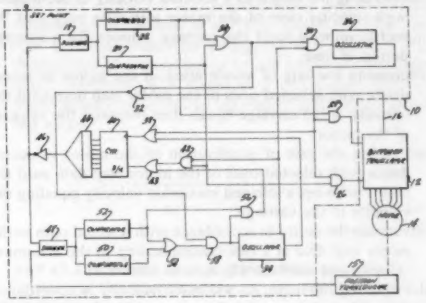
f. buffering and scaling said sampled output to provide DC voltage proportional to shaft angle.

4,254,370

CLOSED LOOP POSITIONER FOR A STEPPING MOTOR DRIVEN BY A BUFFERED TRANSLATOR

Peter S. Miller, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 31, 1978, Ser. No. 929,639
Int. Cl.[3] G05B *19/40*
U.S. Cl. 318—685 **7 Claims**



1. A closed loop servo system for adjusting the position of a stepping motor, wherein a buffered translator receives command pulses calling for either forward or reverse motor steps and causes the motor to execute the command pulses, comprising:

set point signal generating means for generating a signal representing the desired position of said motor;

position transducer means for generating a signal representing the actual position of said motor;

control means for generating command pulses in response to a change in said set point signal for transmission to said buffered translator;

first feedback means for insuring that a sufficient number of command pulses are generated to achieve the desired change in motor position;

second feedback means, connected to said position transducer means, for determining whether or not said motor executes every command pulse received by said buffered translator;

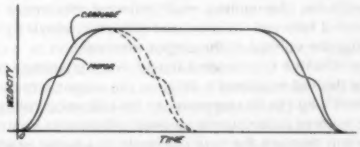
correction means for causing said control means to generate additional command pulses to said buffered translator in order to compensate for any positioning error resulting from the failure of said motor to execute each command pulse which is received by said buffered translator, thereby ultimately causing said position signal to agree with said set point signal.

4,254,371

PHOTOCOMPOSER ESCAPEMENT CARRIAGE CONTROL

Frank L. Scholten, Katonah, N.Y., assignor to AM International, Inc., Los Angeles, Calif.

Continuation of Ser. No. 802,859, Jun. 2, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,636
Int. Cl.[3] G05B *19/40;* **B41B** *13/00*
U.S. Cl. 318—685 **1 Claim**



1. In a system having an escapement carriage coupled by

cable to a stepper motor and driven by the stepper motor, a method of controlling the stepper motor using selected motor step data representing a selected number of time intervals between steps for moving the carriage a selected distance from a first to a second stationary position at a selected maximum velocity in a manner which substantially eliminates ringing when stopping of the carriage at the second stationary position, the method comprising the steps of:

accelerating the motor to a selected velocity in accordance with selected ones of the motor step data such that the motor velocity leads the carriage velocity for a selected period of time;

decreasing the rate of acceleration of the motor in accordance with selected ones of the motor step data until the velocity of the carriage equals then surpasses the velocity of the motor;

increasing the rate of acceleration of the motor in accordance with selected ones of the motor step data until the motor achieves a selected maximum velocity equaling the velocity of the carriage;

advancing the motor in accordance with selected ones to the motor step data at a rate corresponding to the maximum velocity and substantially zero acceleration;

decelerating the motor to a selected velocity in accordance with selected ones of the motor step data such that the velocity of the motor lags the velocity of the carriage;

decreasing the rate of deceleration of the motor in accordance with selected ones of the motor step data until the velocity of the motor equals then surpasses the velocity of the carriage; and

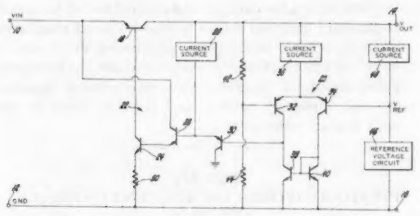
increasing the rate of deceleration of the motor in accordance with selected ones of the motor step data until the carriage reaches substantially zero velocity thereby substantially eliminating ringing when the carriage is stopped.

4,254,372

SERIES PASS VOLTAGE REGULATOR WITH OVERCURRENT PROTECTION

Chester A. Moore, Jr., Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 21, 1979, Ser. No. 13,141
Int. Cl.³ G05F *1/58*
U.S. Cl. 323—277 **3 Claims**



1. A voltage regulator having overcurrent protection comprising, in combination:

an input terminal adapted for connection to an unregulated voltage source;

an output terminal adapted for connection to a load;

a series pass transistor having base, emitter and collector electrodes, the emitter and collector electrodes being coupled between the input and output terminals for regulating the voltage at the output terminal;

means effective to provide a fixed reference voltage related to a desired regulated voltage at the output terminal;

an amplifying circuit responsive to the reference voltage and the voltage at the output terminal effective to control the current through the base electrode to a value producing substantially the desired regulated voltage at the output terminal, the base electrode current having a value that is indicative of the current supplied to the load through the series pass transistor;

a current sensing resistor series coupled with the base electrode, the current sensing resistor having a voltage thereacross that is a measure of the base electrode current and being indicative of the current supplied to the load through the series pass transistor; and

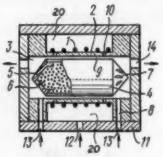
means responsive to the magnitude of the voltage across the current sensing resistor effective to limit the current through the base electrode of the series pass transistor to a predetermined value indicative of a maximum allowable current through the series pass transistor to thereby provide overcurrent protection.

4,254,373

SENSOR FOR GENERATING NUCLEAR MAGNETIC RESONANCE SIGNALS

Endel T. Lippmaa, ulitsa Sybra, 14, kv. 2; Madis A. Alla, ulitsa Trummi, 23a, kv. 25, both of Tallin; Ants A. Salumyae, ulitsa Pykhya, 18, kv. 24, Keila, and Tiit A. Tukherm, Ed. Vilde tee, 143, kv. 21, Tallin, all of U.S.S.R.

Filed Mar. 27, 1978, Ser. No. 890,252
Claims priority, application U.S.S.R., Jun. 3, 1977, 2491999
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—321 **21 Claims**



1. A sensor of increased sensitivity and resolution for generating nuclear magnetic resonance signals for use in high resolution NMR spectrometry of solids, comprising:

a non-magnetic frame having a central hole and adapted to be disposed between the poles of an electromagnet;

a radio-frequency NMR coil wound around said frame;

a hollow, substantially symmetrical and rotatably stable, rotor having a rotation axis adapted to contain a test sample, arranged coaxially within the confines of said central hole and inside said coil, and said hollow rotor having drive means for rapid rotation, said drive means being of a gas stream; the rotational axis of said rotor being capable of orientation at any angle, within a range of 0° to about 54°44″ relative to an induction vector within a flux plane of the magnetic field of said electromagnet;

a substantially uniform gap being defined by an inner surface of said frame and an external surface of said rotor, and

a generally tubular shape gas-bearing pillow adapted to be formed in said gap between said inner surface of said frame and said external surface of said rotor by compressed gas delivered into said gap.

4,254,374

CABLE TESTER

Axicor T. Trihus, 2719 Hamline Ave. North, St. Paul, Minn. 55113

Filed Apr. 2, 1979, Ser. No. 25,920
Int. Cl.³ G01R *31/14*
U.S. Cl. 324—54 **17 Claims**

1. A cable tester for testing an electrical cable having a first conductor, a second conductor, and insulation therebetween forming a cable capacitance, the cable tester comprising:

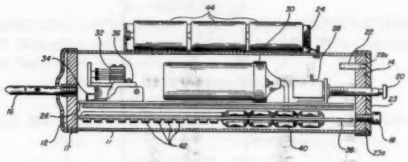
a housing;

a first terminal comprising a rigid elongated electrically conductive male contact prod extending outward from a

first end of the housing for insertion in a female type electrically insulating receptacle having an electrical contact therein electrically connected to the first conductor, whereby the first terminal is electrically connected to the first conductor when the male contact prod is inserted in the receptacle and engages the electrical contact therein;

a second terminal for connection by a non-rigid connector means to the second conductor;

capacitor means connected between the first and second terminals;



charging means for charging the capacitor means and thereby simultaneously charging the cable capacitance to establish a DC voltage; and

annunciator means for providing an indication when the DC voltage attains a threshold value, whereby failure of the DC voltage to attain the threshold value within a time period after connection of the first and second terminals to the first and second conductors is indicative of a fault in the insulation between the first and second conductors.

4,254,375

METER SYSTEM FOR INDICATING A PLURALITY OF VARIABLES WITH A SINGLE METER

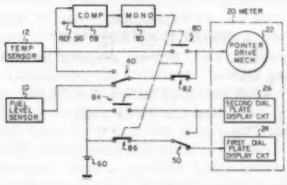
Hideoki Matsuoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 18, 1979, Ser. No. 4,523

Claims priority, application Japan, Mar. 4, 1978, 53-25297

Int. Cl.[3] **G01R** *15/08*

U.S. Cl. 324—115 **5 Claims**



1. A meter system for indicating a plurality of variables with a single meter, comprising:

pointer driving means for driving a pointer which indicates the magnitude of one of said variables by the position of said pointer in response to an electrical signal indicative of said one of said variables;

first switching means for selectively supplying an electrical signal indicative of one of said variables to said pointer driving means;

dial plate means disposed adjacent to said pointer for providing scales which respectively correspond to said variables, said dial plate means including a plurality of dial plate display circuits for respectively displaying said scales;

second switching means for selectively energizing one of said dial plate display circuits in correspondence with the selected variable;

comparing means for producing a signal when the magnitude of a predetermined one of said variables exceeds a predetermined value;

timer means responsive to the signal from the comparing means for producing a signal for a predetermined period of time;

third switching means for transmitting only a signal indicative of said predetermined one of said variables to said pointer driving means upon presence of said signal from said timer means for said predetermined period of time, irrespective of the state of said first switching means; and

fourth switching means for energizing only one dial plate display circuit corresponding to said one of said predetermined variables upon presence of said signal from said timer means irrespective of the state of said second switching means.

4,254,376

APPARATUS FOR MEASURING THE ELECTRIC POWER OR ENERGY IN AN A-C NETWORK

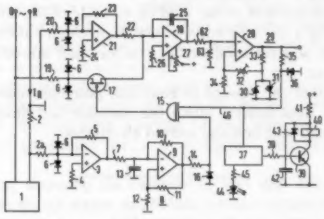
Günter Steinmüller, Nuremburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,236

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747385

Int. Cl.[3] **G01R** *21/06*

U.S. Cl. 324—142 **10 Claims**



1. In an apparatus for measuring the energy consumption in an A-C network comprising a shunt coupled in series with the load for deriving a voltage proportional to load current; means for deriving a quantity proportional to voltage; a solid state switch coupled to be controlled by the voltage output from said shunt having as an input said quantity porportional to load voltage; integrating means having its input coupled to the output of said solid state switch; and a limit stage having its input coupled to the output of said amplifier, the improvement comprising:

(a) a first operational amplifier having as an input the voltage drop across said shunt and developing an output current;

(b) a second operational amplifier coupled to have the output characteristics of an astable multivibrator having;

(i) a first resistor coupling the output of said first operational amplifier to the input of said second operational amplifier;

(ii) a capacitor between the inverting input of said second operational amplifier and ground;

(iii) a second resistor coupling the output of said operational amplifier to its inverting input;

(iv) a third resistor coupling the output of said operational amplifier to its non-inverting input; and

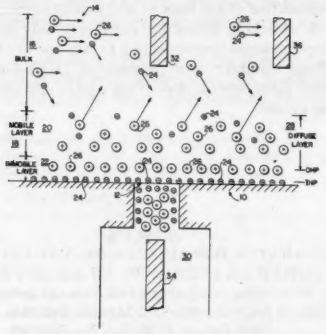
(v) a fourth resistor coupling the noninverting input of said second amplifier to ground; and

(c) said means for integrating comprising a third operational amplifier having capacitive feedback.

4,254,377
METHOD FOR SENSING ELECTRICAL POTENTIALS

Eugene Findl, Amityville, N.Y., and Robert J. Kurtz, Cliffside Park, N.J., assignors to Howmedica Inc., New York, N.Y.

Division of Ser. No. 815,072, Jul. 12, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,600
Int. Cl.[3] G01N *27/60*
U.S. Cl. 324—453 6 Claims



1. A method of monitoring changes in the electrical properties of an ionic fluid when flowing along a solid interface whereby a double layer is formed between the interface and the bulk of the fluid, the method comprising:

placing a first passive electrode in electrical communication with the bulk of the fluid on one side of the double layer;

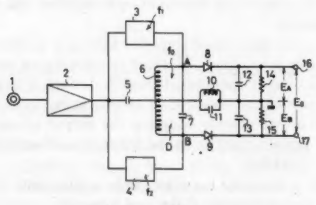
placing a second passive electrode in electrical communication with the solid interface on the other side of the double layer; and

detecting the change in electrical potential resulting from the fluid flowing along the interface and developed between said first and second electrodes.

4,254,378
MODIFIED FOSTER-SEELEY FREQUENCY DISCRIMINATOR

Susumu Ushida, Soma, Japan, assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 5, 1979, Ser. No. 9,297
Claims priority, application Japan, Feb. 8, 1978, 53-14690[U]
Int. Cl.[3] H03D *3/08*
U.S. Cl. 329—137 7 Claims

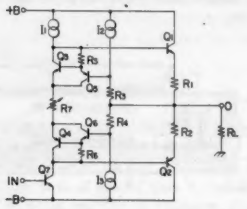


1. In a Foster-Seeley discriminator circuit having a signal source and a discriminating resonance circuit, the improvement comprising a first resonance circuit connected between one end of said discriminating resonance circuit and said signal source, and a second resonance circuit connected between the other end of said discriminating resonance circuit and said signal source.

4,254,379
PUSH-PULL AMPLIFIER CIRCUIT

Yoshihiro Kawanabe, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 15, 1979, Ser. No. 12,421
Claims priority, application Japan, Feb. 17, 1978, 53/17462
Int. Cl.[3] H03F *3/30*
U.S. Cl. 330—268 8 Claims

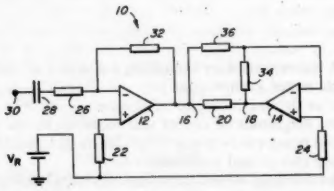


1. In a push-pull amplifier circuit having first and second output transistors whose emitters are commonly connected respectively through first and second resistors to an output point, and base biasing circuits connected between the bases of said first and second output transistors, the improvement comprising said base biasing circuit comprises: first and second current detecting elements coupled to and detecting the currents of said first and second output transistors, said first current detecting element comprising a third transistor the emitter of which is connected through a third resistor to the base of said first output transistor and the base of which is connected to first means for generating a constant voltage with respect to said output point, and said second current detecting element comprises a fourth transistor the emitter of which is connected through a fourth resistor to the base of said second output transistor and the base of which is connected to second means for generating a constant voltage with respect to said output point; first and second variable bias generating means coupled to and controlled by said first and second current detecting elements; and reference bias generating means coupled to said output transistors and current detecting elements.

4,254,380
BRIDGE AMPLIFIER

Michel Y. Guillien, Gex, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1979, Ser. No. 54,193
Int. Cl.[3] H03F *3/26*
U.S. Cl. 330—275 5 Claims



1. A bridge amplifier, comprising:

first and second operational amplifiers, each having an inverting input, a noninverting input and an output, the noninverting input of each one of said first and second operational amplifier being coupled to a terminal at which is supplied a direct current reference voltage said respective outputs being the outputs of the bridge amplifier;

first circuit means for coupling the inverting input of said

first operational amplifier to an input of the bridge amplifier;

first resistive means for coupling the inverting input of said first operational amplifier to the output thereof; and

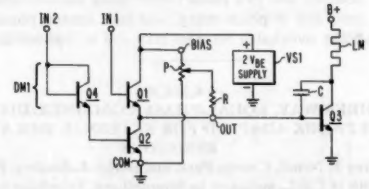
second resistive means for coupling the inverting input of said second operational amplifier both to the output thereof and to said output of said first operational amplifier, said noninverting inputs of said first and second operational amplifiers being direct current isolated from said inverting inputs and said outputs thereof.

4,254,381

BALANCED-TO-SINGLE-ENDED SIGNAL CONVERTERS

Carl F. Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1979, Ser. No. 27,517
Int. Cl.³ H03F 3/04
U.S. Cl. 330—301 **25 Claims**



24. A balanced-to-single-ended converter connected to differentially combine first and second currents supplied at first and second nodes, respectively, by first and second constant current generating means, for obtaining a third current that is applied by direct coupling via a third node to the input connection of an ensuing transistor amplifier, said balanced-to-single-ended signal converter comprising:

first and second transistors of the same conductivity type, having respective base electrodes to which said first and second nodes respectively connect, for respectively receiving said first current and said second current, having respective emitter electrodes respectively connected to said third node and to a point of reference potential, having respective collector electrodes respectively connected to a point of bias potential and to said third node, and exhibiting substantially equal base-to-collector current gains;

means for regulating the difference between said reference and bias potentials to a value twice the quiescent potential maintained between said point of reference potential and said third node by said direct coupling to the input connection of said ensuing transistor amplifier;

a potentiometer with a resistive body between first and second end connections and with an adjustable tap connection galvanically connected to said third node;

means for applying said reference potential to the first end connection of said potentiometer; and

means for applying said bias potential to the second end connection of said potentiometer.

4,254,382

CRYSTAL OSCILLATOR TEMPERATURE COMPENSATING CIRCUIT

Anthony F. Keller, Chicago, and Albert V. Kraybill, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

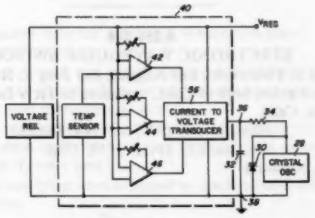
Filed Mar. 19, 1979, Ser. No. 21,524
Int. Cl.³ H03B 5/36, 5/04
U.S. Cl. 331—116 R **11 Claims**

1. A temperature compensating circuit for an oscillator having a frequency determining crystal, and a voltage variable reactance coupled to the crystal for varying the oscillator frequency in response to a control voltage applied to said reactance, comprising:

first current generating means for independently creating a substantially linear current versus temperature variation in a middle temperature range and a non-linear variation in both a hot and a cold temperature range;

second current generating means for creating a substantially non-linear current versus temperature variation in said cold temperature range, said second current generating means including circuitry for independently determining the operative temperature range of said second current generating circuit;

third current generating means for creating a substantially non-linear current versus temperature variations in said hot temperature range, said third current generating means including circuitry for independently determining the operative temperature range of said third current generating circuit;



first current mirror means, coupled to the first current generating means and the third current generating means, for summing currents of said first and third current generating means to produce a first current sum;

second current mirror means, coupled to the first current generating means and the second current generating means, for summing currents of said first and second current generating means to produce a second current sum;

means for summing the currents of said first and second current mirror means to produce a total current sum, and for generating a control voltage with the same temperature variation as said total current sum; and

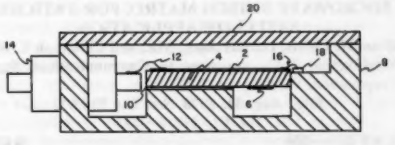
means for coupling said control voltage to said reactance means whereby said oscillator frequency is maintained at a substantially constant value over all of said temperature ranges.

4,254,383

INVERTED MICROSTRIP PHASE SHIFTER

Allen R. Wolfe, Sauquoit, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,886
Int. Cl.³ H01P 1/185, 3/08, 5/08
U.S. Cl. 333—161 **3 Claims**



1. An inverted micro-strip phase shifter on an RF transmission line with minimum attenuation of a broadband RF signal on said line, comprising in combination:

a hollow metallic case having at least one open side;

a D.C. connector located through an opening in said metal-

lic case so that at least one D.C. voltage can be applied within a hollow area of said metallic case;

a substrate positioned within said metallic case having a first surface and a second surface, said first surface being exposed to a first hollow area within said metallic case and said second surface being exposed to a second hollow area within said metallic case;

bias circuitry located on said first surface of said substrate;

at least one center conductor located on said second surface of said substrate;

an adhesion layer for permanently mounting said substrate upon a portion of said metallic case;

a first lead connecting said D.C. connector to said bias circuitry;

a diode having a first and a second end, said first end being connected to said metallic case;

a second lead connecting said second end of said diode to said bias circuitry; and

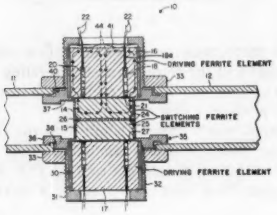
at least one cover for enclosing any open sides of said metallic case.

4,254,384

ELECTRONIC WAVEGUIDE SWITCH

Wieslaw S. Piotrowski, Los Angeles, and Jorg E. Raue, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 7, 1977, Ser. No. 848,853
Int. Cl.[2] H01P 1/10, 1/38
U.S. Cl. 333—1.1 **16 Claims**



1. An electronic waveguide switch comprising:

a housing forming a central region and including at least three waveguide ports;

at least one switchable junction ferrite element disposed in said central region;

at least one driver ferrite element having an annular recess, said ferrite elements having outer perimeters with generally similar shapes; and

a magnetizing coil disposed in said annular recess, whereby when a signal is applied to a first of said ports and said coil is energized, said junction ferrite element is caused to switch and hence latch and the signal is rotated to a second port.

4,254,385

TWO-DIMENSIONAL (PLANAR) TDMA/BROADCAST MICROWAVE SWITCH MATRIX FOR SWITCHED SATELLITE APPLICATION

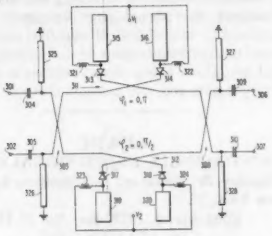
William H. Childs, Gaithersburg, Md., and Christoph E. Mahle, Washington, D.C., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 31, 1978, Ser. No. 938,572
Int. Cl.[2] H01P 1/15
U.S. Cl. 333—104 **9 Claims**

1. A planar microwave phase shifter switch comprising:

an input planar 3-dB quadrature hybrid coupler and an output planar 3-dB quadrature hybrid coupler, each of said couplers having first and second inputs and first and second outputs; and

a first switchable phase shifter connected between the first output of said input hybrid coupler and the first input of said output hybrid coupler, and a second switchable phase shifter connected between the second output of said input



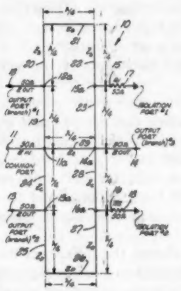
hybrid coupler and the second input of said output hybrid coupler, said first phase shifter being switchable between zero and π phase delay, and said second phase shifter being switchable between zero and $\pi/2$ phase delay.

4,254,386

THREE-WAY, EQUAL-PHASE COMBINER/DIVIDER NETWORK ADAPTED FOR EXTERNAL ISOLATION RESISTORS

Jeffrey T. Nemit, Canoga Park, and Bobby J. Sanders, Pacoima, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,862
Int. Cl.[3] H01P 5/12
U.S. Cl. 333—128 **7 Claims**



1. A three-way microwave power combiner/divider comprising:

a common port and first, second and third branch ports;

first and second isolation ports;

common, first, second and third junctions and first and second isolation junctions each connected to a corresponding one of said ports;

first means comprising a first quarter-wave transmission line section connected from said common junction to said first junction, a second quarter-wave transmission line section connected from said common junction to said second junction, and a third quarter-wave transmission line section connected from said common junction to said third junction;

second means comprising a first three-quarter wavelength transmission line section connected from said first junction to said first isolation junction and a second three-quarter wavelength transmission line section connected from said second branch junction to said second isolation junction;

third means comprising a fourth quarter-wave transmission

line section connected from said third junction to said first isolation junction and a fifth quarter-wave transmission line section connected from said third branch junction to said second isolation junction;

and first and second external isolation resistors connected discretely to said first and second isolation ports, respectively, and means connecting said first and second isolation ports to said first and second isolation junctions, respectively.

4,254,387

ACOUSTIC WAVE DEVICES

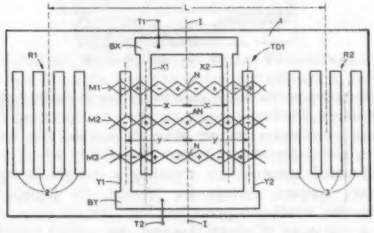
Martin Redwood, Sevenoaks; Richard Stevens, Copthorne; Philip D. White, Chessington, and Richard F. Mitchell, Merstham, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,141

Claims priority, application United Kingdom, Oct. 6, 1977, 41654/77

Int. Cl.³ H03H *9/25, 9/64, 9/145*

U.S. Cl. 333—194 **13 Claims**



1. An acoustic wave resonator device comprising, a substrate able to propagate acoustic waves, a pair of spaced apart reflectors on the substrate forming a resonant cavity capable of supporting an acoustic standing wave in the substrate at a plurality of distinct resonant mode frequencies, a pair of terminals, a transducer includi ' an array of electrodes interdigitally connected to said terminals and disposed on a surface of the substrate between the pair of reflectors for coupling with acoustic standing wave energy in the cavity, each said reflector comprising a periodic grating structure having a reflective frequency passband and comprising a plurality of discrete discontinuities at said substrate surface for reflecting a portion of acoustic wave energy incident thereon, the configuration of the reflectors relative to the distance by which they are spaced apart being arranged so that the combined reflective frequency passband of the pair of reflectors includes only three adjacent distinct resonant mode frequencies, the array of electrodes being symmetrically arranged with respect to a central point of the cavity which coincides with an anti-node and a node respectively of the standing wave at an odd mode frequency which comprises the middle one of said three frequencies and at even mode frequencies which comprise the other two of said three mode frequencies, the array of electrodes forming a plurality of pairs of electrodes with the effective centres of the two electrodes of each pair being equally spaced in opposite directions parallel to the length of the cavity from said central point of the cavity, and means electrically connecting the two electrodes of each pair in common to the same one or other of said pair of terminals whereby the transducer has a zero net coupling with standing wave energy at both said even mode frequencies, and the spacing of the electrodes from said central point of the cavity is arranged so that the transducer has a non-zero net coupling with standing wave energy at said odd mode frequency.

4,254,388

FREQUENCY SELECTOR APPARATUS

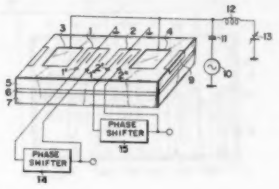
Nobuo Mikoshiba, Sendai; Shoichi Minagawa, and Takeshi Okamoto, both of Toda, all of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 74,626

Claims priority, application Japan, Sep. 22, 1978, 53-117010

Int. Cl.³ H01L *41/04, 27/20;* **H03H** *9/64*

U.S. Cl. 333—195 **5 Claims**



1. A frequency selector apparatus which comprises:

a piezoelectric device;

unidirectional input and output surface-acoustic-wave transducers each disposed in an acoustic wave propagation path on said piezoelectric device;

reflecting electrodes each disposed in said acoustic wave propagation path on opposite sides of said transducers adjacent thereto; and

means for applying an a.c. signal to each of said reflecting electrodes.

4,254,389

PUSHBUTTON TUNER HAVING TAPERING PORTION PIVOTAL PINS

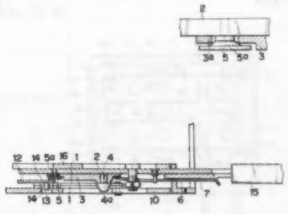
Yasuhisa Nishikawa; Yoichi Ishii, and Takao Kanai, all of 50 Kamitoda, Toda-shi, Saitama-ken, Japan

Filed Jul. 18, 1979, Ser. No. 58,630

Claims priority, application Japan, Jul. 21, 1978, 53/88268

Int. Cl.³ H03J *5/08*

U.S. Cl. 334—7 **2 Claims**



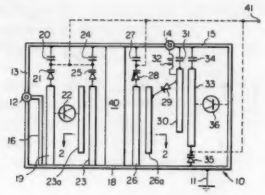
1. A pushbutton tuner comprising a plurality of tuning coils; cores adapted to move in-and-out of the coils, respectively; a slide member for displacing said cores relative to said coils, respectively; a plurality of pairs of actuating links engaged with said slide member, said actuating links of each pair being crossed each other at the point where the links engage the slide member and pivotal relative to each other; a plurality of button slides; push buttons provided on the button slides, respectively; frequency regulating members pivotally connected to the button slides, respectively; setting pins provided on said frequency regulating members respectively, and adapted to engage with the crossing points defined by respective pairs of the actuating links; and pivotal pins for pivotally connecting said frequency regulating members to said button slides, respectively; which tuner is characterized in that each of said pivotal pins is formed with a head having an adjacent tapering portion usable to pivotally connect the frequency regulating member to the button slide.

4,254,390

COMPACT ELECTRONIC TUNING DEVICE

Mitsuo Saito; Mitsuo Makimoto, and Sadahiko Yamashita, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 27, 1979, Ser. No. 15,602
Claims priority, application Japan, Feb. 28, 1978, 53-22972
Int. Cl.³ H03T *3/00, 1/00, 5/00*
U.S. Cl. 334—85 **4 Claims**



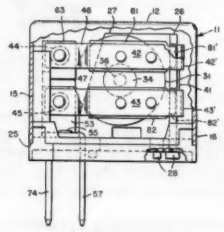
1. A bandpass filter comprising:
a conductive housing;
a dielectric substrate supported in said housing;
a pair of first and second resonant circuits each including an elongated conductor to serve as an inductive transmission line and a capacitive element connected to the transmission line in series between a pair of oppositely facing walls of said housing, the transmission lines of said resonant circuits being disposed on one side of said substrate and arranged parallel to each other; and
an elongated conductor disposed on said one side of said substrate between said transmission lines and spaced therefrom and electrically connected at each end thereof with the wall of said housing.

4,254,391

SPLIT ARMATURE RELAY

Richard E. Gould, Shelby, N.C., assignor to Fasco Industries, Inc., Boca Raton, Fla.

Filed Sep. 17, 1979, Ser. No. 76,249
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—119 **10 Claims**



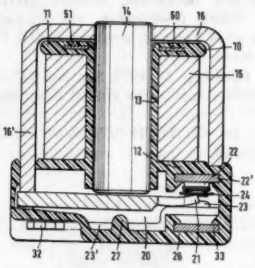
1. A relay, comprising
a housing having therein a pair of stationary electrical contacts,
a relay coil in said housing,
a bifurcated member fixed in said housing and having integral therewith a pair of spaced spring arms extending transversely across one end of said coil,
an armature connected to each of said spring arms to effect movement thereof between first and second limit positions, and independently of each other, upon energization and deenergization, respectively, of said coil, and
a pair of movable contacts connected to said spring arms for movement thereby, and independently of each other, to engage said stationary contacts when said spring arms are in one of said first and second limit positions, respectively, and to disengage said stationary contacts when said spring arms are in the other of said first and second limit positions.

4,254,392

ELECTROMAGNETIC RELAY

Hans Prohaska, Bietigheim-Bissingen, and Ulrich Schwarz, Heilbronn, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,648
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811997
Int. Cl.³ H01H *50/04*
U.S. Cl. 335—202 **6 Claims**



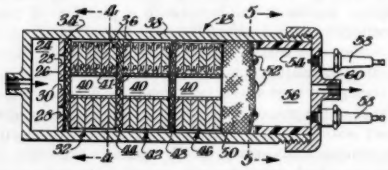
1. Electromagnetic relay adapted for use in motor vehicles, comprising a winding support carrying an operating coil, a magnetic core and a magnet yoke secured on said winding support, and comprising a contact chamber in which a movably mounted armature for actuating a contact spring and stationary contacts springs are located, the improvement wherein the winding support and the contact chamber are made in one piece of plastic material, the contact chamber is substantially rectangular and has one end open to enable the insertion into the chamber of the stationary contact springs, the movable contact spring and the armature.

4,254,393

TREATMENT OF FUEL

T. Garrett Robinson, P.O. Box 128, Galena, Md. 21635

Filed Jul. 23, 1979, Ser. No. 59,576
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—209 **8 Claims**



1. A device for treating fuel comprising a fuel treating casing having a magnetic flux applying chamber and an electrical field applying chamber downstream therefrom, a plurality of sets of spaced magnets in said magnetic flux applying chamber, a distributor plate having a plurality of openings therethrough at the upstream end of said magnetic flux applying chamber, a screen material between said distributor plate and the upstream set of magnets and between each pair of sets of magnets and the downstream end of said magnetic flux applying chamber, a plurality of spacers in contact with said sets of magnets maintaining said sets of magnets spaced from each other and from said distributor plate while providing a relatively tightly held axially positioned assembly, said spacers also providing open areas between adjacent sets of magnets, said screen material comprising at least some of said spacers in contact with its

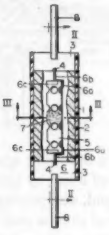
respective sets of magnets, said set of magnets having a cross section conforming to and spaced from the inner wall of said casing to provide a peripheral passageway between said inner wall and said sets of magnets, said sets of magnets cross section also conforming to the shape of said distributor plate, an axial passageway formed through said sets of magnets, said distributor plate having a central hole and a plurality of coarcuate holes for directing the fuel passing therethrough into said axial passageway and into said peripheral passageway to facilitate the fuel being subjected to the magnetic force applied by the individual magnets of said sets, electrical field producing means in said electrical field applying chamber, an inlet opening in the upstream end of said casing and an outlet opening in the downstream end of said casing whereby fuel may be fed into said casing and pass through said distributor plate and thence be subjected to the influence of said spaced sets of magnets and then to the electrical force before being discharged therefrom.

4,254,394

ELECTRIC FUSE HAVING PLUG TERMINALS

Frederick J. Kozacka, South Hampton, and Richard A. Belcher, Hampton Falls, both of N.H., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 20, 1979, Ser. No. 68,237
Int. Cl.³ H01H *85/16*
U.S. Cl. 337—231 **17 Claims**



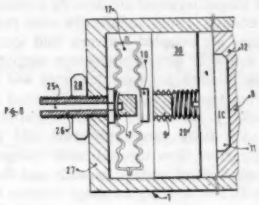
1. An electric low-voltage fuse comprising
(a) a tubular casing of electric insulating material;
(b) a pulverulent arc-quenching filler inside said casing;
(c) a pair of plug terminals arranged inside said casing and plugging the ends thereof;
(d) grooves in the axially inner end surfaces of said pair of plug terminals; and
(e) a perforated fusible element inside said casing, embedded in said arc-quenching filler and forming a portion of a current path conductively interconnecting said pair of plug terminals, wherein the novel feature consists in that
(f) the ends of said fusible element are conductively connected to said pair of plug terminals by a pair of intermediate connectors each formed by a bent metal strip of which the axially inner end is conductively connected to said fusible element, of which the axially outer end is inserted into said grooves of and conductively connected with said pair of plug terminals and arranged in planes parallel to, and spaced from, the planes defined by said axially inner end, and each said metal strip further including a transversely arranged intermediate portion conductively connecting said axially inner end and said axially outer end thereof.

4,254,395

ELECTROMECHANICAL FORCE CONVERTER FOR MEASURING GAS PRESSURE

Werner Herden, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,274
Int. Cl.³ H01L *10/10, 43/02*
U.S. Cl. 338—42 **5 Claims**



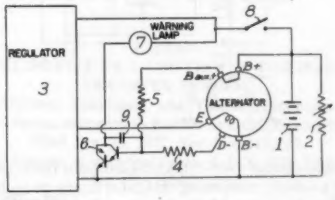
1. Electromechanical force converter for measuring pressure by an electrical signal, comprising:
a membrane exposed to the pressure to be measured;
a Hall-effect sensor unit, and
a first and a second permanent magnet formed of an alloy of cobalt and a rare earth element of which the combined magnetic field produces an electrical voltage in the sensor unit that changes in dependence on the said pressure, said magnets (7,9) having their respective poles of the same polarity facing each other and said second magnet (9) being located on the side of said Hall-effect sensor unit (10) facing away from said first magnet (7).

4,254,396

ALARM CIRCUIT FOR CAR ALTERNATOR

Pierre Saudax, Brissac Quince, France, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 14, 1979, Ser. No. 38,965
Claims priority, application France, May 23, 1978, 78 15309
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 R **8 Claims**



1. An alarm circuit for indicating a defect in a diode-rectified alternator for charging a car battery having positive and negative terminals connected for charging, respectively, to first and second alternator output terminals of said alternator at which rectified positive and negative voltages are provided, the voltage between said first and second alternator output terminals being maintained at a normal running output voltage for charging the battery during normal alternator operation, said alarm circuit comprising:
an electrical commutation circuit having an output path and a control terminal for providing current flow through said output path in response to when a control voltage at the control terminal exceeds a predetermined threshold voltage with respect to said second alternator output terminal,
a warning device connected with and controlled by said output path between said battery terminals, and

a voltage divider for providing said control voltage, said divider having a central point connected to said control terminal and two end terminals connected, respectively, to first and second auxiliary terminals of said alternator, said first and second auxiliary terminals providing potentials substantially equal to the potentials at said first and second alternator output terminals, respectively, during the normal running operation of said alternator,

wherein said first auxiliary alternator terminal and said first alternator output terminal are directly connected together to be maintained at substantially the same potential, while diode means are coupled between said second auxiliary terminal and said second alternator output terminal to isolate said second auxiliary terminal and said voltage divider from said second alternator output terminal and one of said positive and negative battery terminals, wherein said diode means prevents said battery from supplying current flow through said voltage divider and wherein said control voltage exceeds said threshold voltage For both low and high voltage outputs between said first and second alternator output terminals thereby causing excitation of said warning device, and said control voltage is less than said threshold voltage for the normal running voltage output, between said low and high voltage outputs, being provided between said first and second alternator output terminals.

4,254,397

INDICATOR ARRANGEMENT

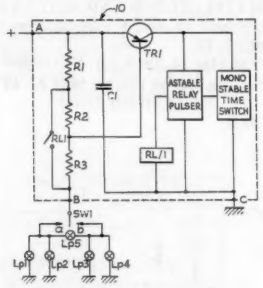
Brian Shannon, 8 Cairndale Dr., Leyland, Preston PR5 2BX, Lancashire, England

Filed Mar. 13, 1979, Ser. No. 20,190

Claims priority, application United Kingdom, Mar. 22, 1978, 11325/78; Aug. 9, 1978, 32765/78

Int. Cl.[3] B60Q *1/40*

U.S. Cl. 340—56 **4 Claims**



1. An automatically self-cancelling indicator flasher arrangement for a vehicle comprising: indicator lamps on each side of a vehicle and connectable to a source of power by means of circuitry; said circuitry including in series, a single-pole changeover switch having a central neutral position and two alternative operative positions, and switching means, an oscillator connected to operate said switching means to allow a pulsed flow of current to said lamps when said oscillator is activated, a timer having an "on" period which commences when said timer is activated and which turns off said oscillator at the end of said "on" period; and an electronic switch which connects said oscillator and said timer to a power source, said electronic switch being caused to conduct by current flow therefrom to ground via said indicator lamps upon actuation of said changeover switch from its said central neutral position to either of its said operative positions, said timer and said oscillator being activated upon connection to said power source by conduction of said electronic switch, said switching means having values such that the potential difference developed across said switching means between said power source and said changeover switch during the period when said changeover switch is actuated from its said central neutral position to an operative position being sufficient to maintain said electronic switch in its conducting condition, and return of said changeover switch to its said central neutral position serving to cause said electronic switch to cease conducting thereby disconnecting said power source from said timer and said oscillator, and thus resetting said timer.

4,254,398

TIRE PRESSURE DROP ALARMING APPARATUS

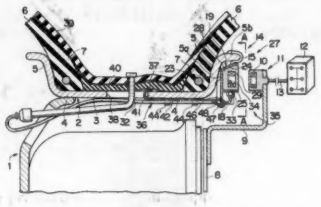
Akira Matsuda, Higashimurayama; Norio Goshima, Musashino; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,373

Claims priority, application Japan, Sep. 29, 1977, 52-130900[U]; Jun. 20, 1978, 53-84351[U]

Int. Cl.[3] B60C *23/04*

U.S. Cl. 340—58 **6 Claims**

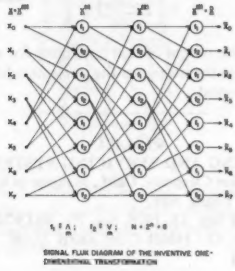


1. A tire pressure drop alarming apparatus for alarming an abnormal pressure drop of a tire by transforming said pressure drop into an electric signal, comprising a detection switch for detecting pressure drop of pressurized air in a tire; an air pipe connecting said detecting switch and a valve stem of said tire for allowing said pressurized air into said detection switch; a resonance coil resonating to electric waves radiated from an oscillation coil positioned opposite thereto when said detection switch detects a predetermined pressure drop of said pressurized air; said tire pressure drop alarming apparatus being positioned axially outwardly from a rim flange of a wheel rim which has a vertical portion substantially vertical to a rotational axis of said tire and a parallel portion connected at the radially outward end of said vertical portion in substantially parallel relation to the rotational axis of said tire and is adapted to retain said detection switch, said air pipe, and said resonance coil, the apparatus further including a resonance condenser and a retaining body made of metal including a base plate portion interposed between and separating said resonance coil from said vertical portion of said rim flange in such a way that said vertical portion of said rim flange is prevented from imparting characteristics to said resonance coil, and a side plate portion integrally connected with said base plate portion interposed between and separating said resonance coil from said parallel portion of said rim flange in such a way that said parallel portion of said rim flange is prevented from imparting characteristics to said resonance coil, said retaining body being attached to said rim flange with said base plate portion and said side plate portion remaining undeformed.

4,254,399
PROCESS FOR AUTOMATIC PATTERN EVALUATION WITH THE AID OF A RAPID IMAGE PROCESSING AND CIRCUIT FOR CARRYING OUT THE PROCESS

Hans Burkhardt, Karlsruhe; Walter Metzdorff, Friedrichshafen, and Holger Schütte, Stetten, all of Fed. Rep. of Germany, assignors to Dornier GmbH, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,956
Int. Cl.[3] G06K 9/56
U.S. Cl. 340—146.3 MA 2 Claims



SIGNAL FLUX DIAGRAM OF THE INVENTIVE ONE-DIMENSIONAL TRANSFORMATION

1. A circuit for implementing a process for one-dimensional automatic pattern evaluation, particularly measuring data evaluation in technical and medical fields of application, with the aid of a rapid image processing,

which comprises employing digitalized data as input quantity for the following transformation:

$$x_{2i}^{(r+1)} = f_1(x_i^{(r)}, x_{i+N/2}^{(r)})$$

$$x_{2i+1}^{(r+1)} = f_2(x_i^{(r)}, x_{i+N/2}^{(r)}) \qquad \left.\begin{array}{l} i = 0 \\ N/2 - 1 \end{array}\right| \quad \begin{array}{l} r = 0, 1, \ldots, n-1 \\ N = 2^n, \end{array}$$

$$\underline{x}^{(0)} = \underline{x}, \ \underline{x} = \underline{x}^{(n)}$$

wherein

x is the original pattern

x is the transformed pattern

$N=2^n$ is the dimension of x

r is the number of the processing step

n is the quantity of the processing steps

$f_1(A,B)$ is the Boolean AND connection A B (bitwise)

$f_2(A,B)$ is the Boolean OR connection A B (bitwise) to signify that some structurally specific result coefficients of this transformation are selected with the aid of a known classification,

whereby the comparison between the pattern and the actual data set is made on the basis of the selected coefficients,

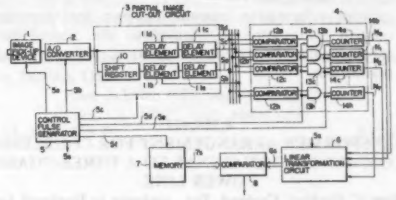
that the criterion for the similarity of two patterns is a distance measurement in the form of a numerical value, for example the Eucledian distance, and

making the decision concerning the presence of the pattern being sought in the actual data set with the aid of a threshold value interrogation, said circuit comprising means connecting storage elements and AND/OR gates, each word being resolved into its individual bits which are processed sequentially separately and in parallel, and where for n pattern points (words) with a resolution of m bits in each case there are present a total of m·n one-bit memories (flip-flops) and ½m·n OR gates and ½m·n AND gates.

4,254,400
IMAGE DATA PROCESSOR

Haruo Yoda, Kodaira, and Jun Motoike, Hachiouji, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 28, 1979, Ser. No. 98,074
Claims priority, application Japan, Dec. 13, 1978, 53-153142
Int. Cl.[3] G06K 9/50
U.S. Cl. 340—146.3 MA 3 Claims



1. An image data processor comprising:

first means (1 and 2) for converting an image including an object to be recognized into spacially quantitized picture element signals;

second means (3) for extracting plural pairs of the picture element signals, which are in spacially preset relative position relationships, from the output of the first-named means while sequentially shifting the picture element positions to be extracted;

third means (4) connected with the second-named means for counting the number of occurences of preset amplitude relationships between the plural pairs of the input signals when the output signals from the second-named means indicate the picture elements which are included in a preset region of the image;

fourth means (7) for dividing a reference image into a plurality of regions to store in advance the feature data of each of the divided regions; and

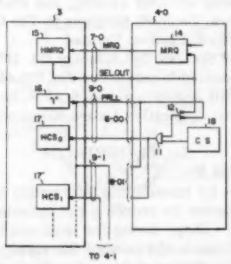
fifth means (8) for sequencially comparing the counted data generated from the third-named means and those data of the fourth-named means, which correspond to said preset regions,

whereby the object in the image is recognized from the compared results of the fifth-named means.

4,254,401
LOCAL DEVICE IN A CONTROL INFORMATION TRANSFER SYSTEM

Hatsuo Murano, Yokohama, and Yoshio Yamamuro, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1977, Ser. No. 810,989
Claims priority, application Japan, Jul. 7, 1976, 51-80711
Int. Cl.[3] H04Q 9/00
U.S. Cl. 340—147 C 2 Claims



1. A local device for operation with both serial and parallel

control information transfer systems having a central device interconnected by a control information bus to a plurality of local devices, each local device comprising:

a gate circuit, which becomes conductive either when a control information bus construction indicating information signal has a value indicating that the control information bus is in its parallel configuration with respect to the connection between the central device and the local devices or when a select out signal is transmitted by the central device; and

a control information transmitting part for transmitting control information, connected to the central device through said gate circuit, by means of said control information bus.

4,254,402

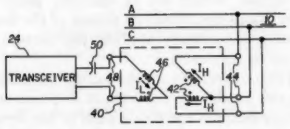
TRANSFORMER ARRANGEMENT FOR COUPLING A COMMUNICATION SIGNAL TO A THREE-PHASE POWER LINE

William C. Perkins, Garland, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 934,449, Aug. 17, 1978, Pat. No. 4,188,619. This application Aug. 17, 1979, Ser. No. 67,259

Int. Cl.[3] **H04B** *3/56*

U.S. Cl. 340—310 R **3 Claims**



1. A transformer arrangement for simultaneously coupling a signal to all three phase conductors of a three-phase power line, comprising:

a pair of high voltage windings serially connected, with their commonly connected leads being connected to one phase of the power line and the uncommon lead of each winding being connected to a different one of the other two phases of the power line:

a pair of low voltage windings serially connected across which the signal is applied, and

means for magnetically coupling each winding of one pair with a different winding of the other pair so that the voltage produced across the uncommon leads of said high voltage windings as a result of the signal applied to said serially connected low voltage windings is zero.

4,254,403

SYSTEMS FOR TRANSMITTING INFORMATION IN AN ALTERNATING CURRENT ELECTRICITY SUPPLY SYSTEM

Leonardo Perez-Cavero, Media, Pa.; Michael W. A. Cross, Bristol, England; Geoffrey Fielding, and Frederick M. Gray, both of Stafford, England, assignors to The General Electric Company Limited, London, England

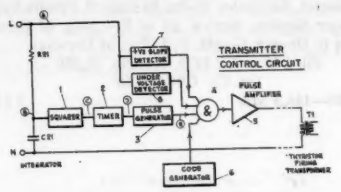
Continuation of Ser. No. 786,578, Apr. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 596,443, Jul. 18, 1975, abandoned. This application Aug. 6, 1979, Ser. No. 63,965

Claims priority, application United Kingdom, Jul. 18, 1974, 31964/74

Int. Cl.[3] **H04B** *3/54*

U.S. Cl. 340—310 R **10 Claims**

7. In a system for transmitting information in an A.C. electricity supply system by reducing the instantaneous value of the A.C. supply voltage during the same small fractional part of each of a selection of cycles of the supply voltage waveform, said part including a time of voltage zero, a receiver comprising: an integrator which integrates the instantaneous value of the supply voltage system for short periods each less than the supply voltage cycle period and each starting at a zero crossing of the waveform of said voltage, the integrator being reset between successive integration periods; and means for



detecting when the output of said integrator for an integration period differs from the output of the integrator for the preceding integration period.

4,254,404

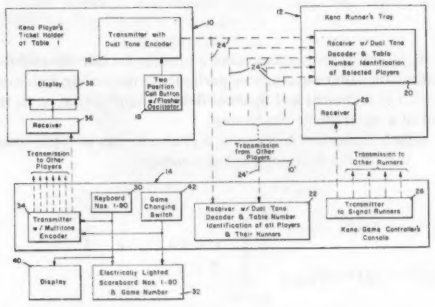
PAGING AND SERVICING SYSTEM

David L. White, San Clemente, Calif., assignor to Kramor Industries Ltd., Las Vegas, Nev.

Filed Sep. 13, 1978, Ser. No. 941,974

Int. Cl.[3] **H04B** *7/26;* **A63B** *71/06*

U.S. Cl. 340—311 **11 Claims**


Keno Player's Ticket Holder at Table 1
Transmitter with Dual Tone Encoder
Display
Two Position Call Button w/Flasher Oscillator
Receiver
Keno Runner's Tray
Receiver w/ Dual Tone Decoder & Table Number Identification of Selected Players
Transmission to Other Players
Transmission from Other Players
Transmission to Other Runners
Keyboard Nos. 1-80
Game Changing Switch
Transmitter w/ Multitone Encoder
Receiver w/ Dual Tone Decoder & Table Number Identification of all Players & Their Runners
Transmitter to Signal Runners
Keno Game Controller's Console
Display
Electrically Lighted Scoreboard Nos. 1-80 & Game Number

1. A paging and servicing system for transfer of information among at least three classes of parties comprising:

a plurality of paging stations, included within a first of the classes, each having a transmitter and a receiver;

at least one servicing station, included within a second of the classes, for said paging stations and having receiver means for receiving first signals transmitted from said paging stations; and

a control station, included within a third of the classes, for said paging and servicing stations and having a receiver for receiving the first signals transmitted from said paging stations and a transmitter for transmitting second signals directly to said receivers at said paging stations and at least periodically to said receiver means at said servicing station.

4,254,405

SELF-CONTAINED EMERGENCY ELECTRIC SIGNAL LIGHT AND AUDIBLIZER

Karl H. Wenzlaff, 9800 Baseline Rd., Space 107, Alta Loma, Calif. 91701

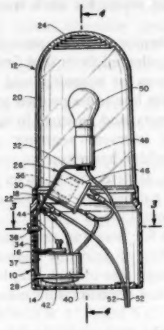
Filed Aug. 9, 1979, Ser. No. 65,284

Int. Cl.[3] **G08B** *5/00, 23/00*

U.S. Cl. 340—321 **13 Claims**

1. In a signal light of the type having a lower base with an upstanding viewing lens enclosing an electric socket and bulb; the improvements comprising: an internal assembly bracket secured to said lower base projecting upwardly along a base

sidewall and having an upper end portion positioned inwardly at generally horizontally centrally of said lens; said socket being secured to said bracket upper end portion projecting upwardly therefrom generally horizontally centrally of said



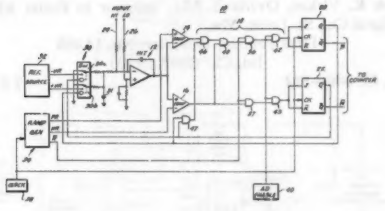
lens; an electrical component mounted on said bracket spaced downwardly from said socket; electric circuit means operably connected to said socket and electrical component for supplying electricity thereto.

4,254,406

INTEGRATING ANALOG-TO-DIGITAL CONVERTER

Lawrence G. Meares, Rancho Palos Verdes, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 29, 1977, Ser. No. 820,373
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 NT **10 Claims**



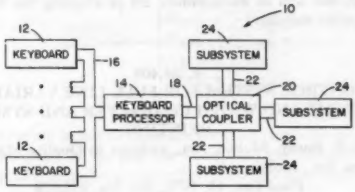
1. Analog-to-digital converter apparatus comprising:
an integrator coupled to receive input analog signals to be converted to digital representations;
comparator means coupled to the integrator for receiving an error signal therefrom and having an output line for supplying the result of a comparison of the error signal with an applied reference signal;
flip-flop means responsive to signals from the comparator means for providing digital incremental time duration outputs corresponding to the analog signals, the flip-flop means having an input terminal and including internal circuitry making up a J-K flip-flop;
means coupled to the flip-flop means for digitizing an incremental time duration output from the flip-flop means to provide an output digital indication of the magnitude and polarity of a corresponding input analog signal;
a voltage reference source;
switching means responsive to an output of the flip-flop means for selectively applying reference potentials from the reference source to the integrator;
logic circuitry coupled between the comparator means output line and the input terminal of the flip-flop means for selectively controlling the application of signals from the comparator means to the flip-flop means input terminal; said logic circuitry including a logic gate for both directing an error signal from the comparator means to the flip-flop means and directing a reset signal to the flip-flop means; and
separate ramp generating means including a ramp generator for generating ramp signals for application to the comparator means for comparison with the error signal from the integrator.

4,254,407

DATA PROCESSING SYSTEM HAVING OPTICALLY LINKED SUBSYSTEMS, INCLUDING AN OPTICAL KEYBOARD

Donald G. Tipon, San Diego, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 18, 1979, Ser. No. 58,702
Int. Cl.³ G06F *3/02;* **A04B** *9/00*
U.S. Cl. 340—365 P **8 Claims**



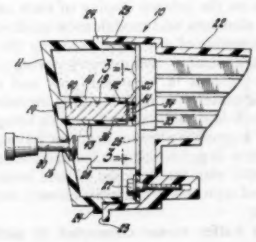
1. In a data processing system having optically-linked subsystems, including a keyboard with a plurality of keys and an optical transmission line for carrying optical signals from said keyboard to at least one other subsystem, the improvement wherein said keyboard comprises:
means for providing optical signals along plurality of optical paths within said keyboard;
means associated with said keys on said keyboard for coding the optical signals along the plurality of optical paths in response to the engagement of any one of said keys; and
means for providing the coded optical signals from said keyboard directly to said optical transmission line so that the coded optical signals may be used to provide the data entered at said keyboard to said other subsystem.

4,254,408

CASE FOR LUMINOUS DISPLAY WITH AMBIENT LIGHT CONDUIT ASSEMBLY

William J. Kerschner, III, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 3, 1979, Ser. No. 99,885
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—366 B **1 Claim**



1. A containing case and ambient light conduit assembly for a luminous display in a motor vehicle instrument panel wherein the display brightness may be controlled according to ambient light intensity, the assembly comprising, in combination:

a generally opaque cover member having an ambient light admitting window and an opaque tube extending from the back of said member and surrounding said window, the tube having an outwardly tapering inner diameter;

a base member including therein a photosensitive device in a cup having an open axial end adapted to face and align with the tube of the cover member, said tube being of such length and diameter as to overlap the cup when the cover and base members are assembled together, whereby the interior of the tube and cup are isolated optically from the display;

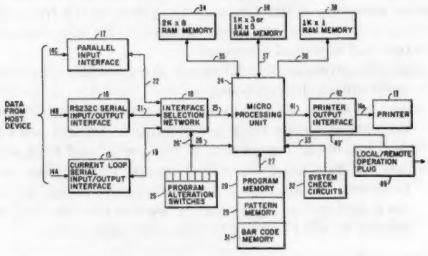
a light conducting conduit member having a step-down diameter end portion adapted for retention in the cup and a main portion having a diameter being at least as large as the cup outer diameter adjacent the cup and tapering to fit the tube inner diameter along its axial length, the conduit member extending from the cup to the window, whereby the light conduit member functions both as a conduit for ambient light from outside the case to the photosensitive device and as an assembly aid in aligning the base and cover members.

4,254,409

CONTROL SYSTEM FOR FULL LINE VARIABLE HEIGHT AND WIDTH CHARACTER AND SYMBOL PRINTING

James L. Busby, Mobile, Ala., assignor to Quality Micro Systems, Inc., Mobile, Ala.

Filed Dec. 15, 1978, Ser. No. 970,028
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—731 **24 Claims**



1. A controller for operating a line-by-line dot printer in a print modification mode, wherein graphical elements are individually selected, individually sized and individually positioned at specified line and column location on a printed display so that elements of different shapes and sizes can be intermixed and displayed in a single pass of the printer, comprising:

input buffer means for receiving and storing coded print modification mode instruction data specifying graphic elements to be printed by the line-by-line dot printer and including means specifying the relative size and relative location on the printed display of each of said specified graphic elements, said modification mode instruction data being incapable of directly controlling the printer;

a first pattern memory, said memory storing possible graphic element patterns in segmental row and column matrix form, the pattern for each segment including line-by-line dot pattern information, each pattern being expansible to provide a graphic element segment having a number of lines which depends upon and corresponds to the size of the graphic element specified by said invention data, the number of segments in a graphic element matrix remaining constant;

conversion buffer means connected to said input buffer means;

first control means for modifying and transferring said instruction data to said conversion buffer means, said control means including means for interleaving control data with said instruction data, whereby said conversion buffer means includes means providing a pattern address for each of said graphic elements specified by said instruction data means providing pattern row and line control counts for each graphic element and means providing a size identifier and a justification count for each specified graphic element;

a second pattern memory for temporarily storing graphic element patterns selected from said first pattern memory;

second control means for scanning said conversion buffer means for each dot line to be printed to call up from said first pattern memory and to store in said second pattern memory graphic element segment patterns for any graphic element which has segments corresponding to the line to be printed, as determined by its justification count means and by its pattern row and line count means;

an output dot memory buffer;

third control means for scanning said second pattern memory and transferring to said dot memory buffer the dot patterns for the single line of each graphic element pattern specified by said line control count means of said conversion buffer;

means for transferring the single line contents of said dot memory buffer out of said controller to set up the dot printer for printing a single line of dots;

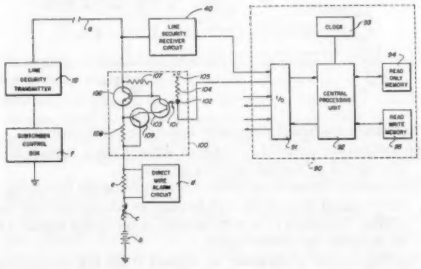
said second control means repetitively scanning said conversion buffer to advance said justification and said pattern row and line count means and to sequentially transfer to said dot memory buffer the dot patterns for each line in each segment pattern and for calling up from said first pattern memory the pattern for the next graphic element segment upon completion of a preceding segment.

4,254,410

PSEUDO-RANDOM PULSE LINE SECURITY MONITORING SYSTEM

Mark K. Virkus, Overland, Mo., assignor to Potter Electric Signal Co., St. Louis, Mo.

Filed Feb. 26, 1979, Ser. No. 14,909
Int. Cl.[3] G08B *29/00*
U.S. Cl. 340—512 **7 Claims**



1. For use with an alarm system of the type utilizing a direct current communications line from remote premises to a monitoring station, line security apparatus to monitor the security of the communications line, comprising

a code transmitter at the remote premises including

code generator means to produce a selected coded progression of digital bits at a clock rate frequency,

means to provide a carrier frequency greater than the clock rate frequency,

means to modulate the carrier frequency according to the coded progression of digital bits, whereby to produce digital signals,

means to impose such digital signals on the direct current in the communications line at the remote premises, and further comprising

a receiver at the monitoring station including

first filter means, operably coupled to the communications

line, to recover and produce at its output signals modulated at the carrier frequency,

second filter means, operably connected to the output of said first filter means, to remove the carrier frequency, whereby to recover the coded progression of digital bits,

digital processor means operably coupled to said second filter means, to determine whether the selected coded progression of digital bits produced at the remote premises is identical to that recovered at the monitoring station by said second filter means, thereby to indicate whether the security of the communications line has been disturbed, and

current limiter means, in the communications line, operatively coupled to said processing means to limit the direct current to a reduced level on occurrence of an indication by said processing means that the coded progression is not identically received.

4,254,411
DANGER ALARM SYSTEM

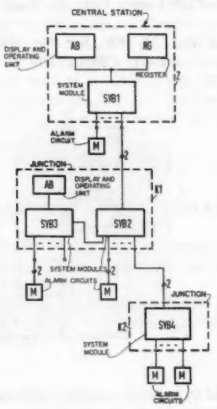
Otto W. Moser, and Peer Thilo, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,388

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817121

Int. Cl.[3] **G08B** *25/00*

U.S. Cl. 340—517 **2 Claims**



1. A danger alarm system comprising:

a plurality of similar system alarm modules;

a plurality of two-wire lines connecting said system alarm modules in a hierarchical system including at least one system alarm module as a central station and a plurality of others of said system alarm modules defining, in said hierarchical system, subordinate and superordinate levels;

each of said system alarm modules including a plurality of connections for receiving alarm signals from respective alarm devices and from at least one subordinate system alarm module;

each of said system alarm modules including connections for display, operating status and recording devices;

each of said system alarm modules including a programmed control comprising a microprocessor for scanning and evaluating incoming signals of the alarm devices and subordinate system alarm modules, and means for transmitting the evaluated signals to a superordinate module;

each of said system alarm modules including a respective power supply; and

each of said system alarm modules including a quiescent-interrupt and alarm display connected in parallel to said programmed control.

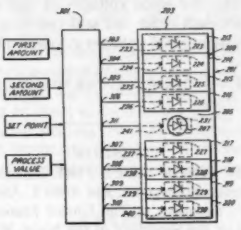
4,254,412
CONTROLLER DEVIATION INDICATOR

Mauro G. Togneri, Houston, Tex., assignor to Powell Industries, Inc., Houston, Tex.

Filed Jun. 12, 1979, Ser. No. 47,710

Int. Cl.[3] **G08B** *19/00*

U.S. Cl. 340—525 **7 Claims**



1. A deviation indicator interface for simultaneously providing the deviation of the process value from the set point for each loop of a multi-loop controller, such deviation indicator interface comprising:

a plurality of deviation indicators, each deviation indicator corresponding to one of the loops of such controller, the deviation indicator for each particular loop including (1) a first indicating means for providing a visible signal whenever the process value of such loop is greater than the set point of such loop by at least a first amount, (2) a second indicating means for providing a visible signal whenever the process value of such loop is less than the set point of such loop by at least a second amount, and (3) a third indicating means for providing a visible signal whenever the process value of such loop is equal to the set point of such loop is greater than the set point of such loop by an amount less than said first amount or is less than the set point of such loop by an amount less than said second amount,

the first and second amounts for each deviation indicator being independently adjustable.

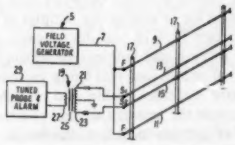
4,254,413
E FIELD BALANCED PHASE INTRUSION ALARM

Ronald W. Mongeon, San Jose, Calif., assignor to Stellar Systems, San Jose, Calif.

Filed Jun. 4, 1979, Ser. No. 45,055

Int. Cl.[3] **G08B** *13/26*

U.S. Cl. 340—561 **5 Claims**



1. In an intruder alarm system wherein a field wire creates an electric field and a sense wire is provided parallel to said field wire and wherein a sensitive amplifying and filtering circuit detects perturbations on said sense wire resulting from the

presence of an intruder intersecting the field between the field wire and the sense wire, the improvement comprising:

a. at least two field wires, said field wires being spaced from each other and running generally parallel to each other;

b. sense wires between said field wires for sensing the field created between each sense wire and each field wire, there being at least two sense wires, said sense wires being spaced from corresponding field wires whereby a common disturbance creates equal voltages on said sense wires, said sense wires being connected to a balanced circuit having an input leading to a filtering and detection system whereby equal voltages on said sense wires will counteract each other and said detection system is actuated only by unequal voltages developed in said two sense wires and;

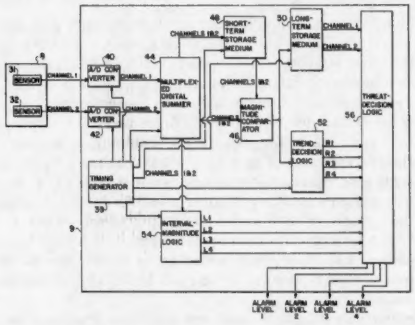
c. said field and sense wires being arranged in a substantially vertical array.

4,254,414

PROCESSOR-AIDED FIRE DETECTOR

Thomas T. Street, Springfield, and John I. Alexander, Vienna, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1979, Ser. No. 23,043
Int. Cl.[3] G08B *17/00*
U.S. Cl. 340—627 **4 Claims**



1. A system for detecting a threat of fire in a frequently changing environment and discriminating against false alarms comprising:

means for sampling ambient air to detect an average amount of particulate matter in the environment, said sampling means including:

duct means for conveying a common flow of said ambient air;

a chamber coupled to said duct means for collecting samples of said ambient air;

siphoning means coupled between said duct means and said chamber for abstracting said samples of the ambient air;

suctioning means coupled between said chamber and said duct means for returning the samples of the ambient air to said common flow in said duct means; and

means for forcing said ambient air through said duct means at a rate of speed, said rate being increased as the particulate matter increases within said chamber to more vigorously sample the ambient air and to determine an average amount of said particulate matter in the environment, said increased rate being decreased as the increased particulate matter decreases within said chamber, said means for forcing the ambient air using different rates of speed for determining a required time for environmental conditions within said chamber to be similar to environmental conditions outside the chamber, such that the required time effectively averages the environmental conditions within the chamber to determine if the environmental conditions outside the chamber present a threat of fire;

two or more sensing means disposed within said sampling means for converting the amount of said particulate matter into electrical signals whose amplitudes are representative of the density of the particulate matter, a first of said sensing means feeding its signals to said means for forcing the ambient air for changing said rate of speed; and

signal processing means for receiving said electrical signals from said two or more sensing means to monitor information comprising a change in the amplitudes of said signals as indications of the progressive and regressive levels of a threat of fire, said signal processing means for storing the information over successive time intervals, and comprising subsequently stored information with previously stored information to determine a rate at which the amounts of particulate matter in the environment increase and decrease, and instantaneous magnitude of the particulate matter in the environment, and a duration of time during which said amounts of particulate matter exist in the environment,

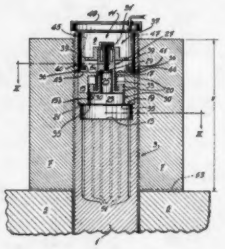
said system determing a normal environmental condition over a period of time and distinguishing a short-term abnormal environmental condition from a long-term threat of fire.

4,254,415

SYSTEM FOR REVEALING CRACKS IN CYLINDRICAL MEMBERS SUCH AS BOLTS, AXLES, ETC., IN SITU

Mark Kaufman, 5725 Leger, Cote St. Luc, Quebec, Canada (H4W 2E5)

Filed Mar. 24, 1980, Ser. No. 133,304
Int. Cl.[3] C08B *21/00*
U.S. Cl. 340—679 **7 Claims**



1. An elongated cylindrical member, such as an axle, bolt, or the like, having means for the in situ detection and indication of cracks therein, said member being generally solid, and comprising:

a cavity extending inwardly from at least one end of said member, and terminating in a bottom surface of said cavity;

a plurality of holes extending inwardly from said bottom surface of said cavity and disposed in circular arrangement around said bottom surface of said cavity and adjacent the periphery of said member;

a ring member disposed in said cavity, said ring member having a top surface and a bottom surface, the bottom surface of said ring member being spaced from the bottom surface of said cavity to define a chamber therebetween;

an opening extending through said ring member from the top surface to the bottom surface thereof;

valve means in said opening for inserting gas under pressure into said chamber and said holes;

wherein, when a crack develops in said member and crosses one of said holes, said gas under pressure will escape, via said crack, from said chamber and said holes; and

means for detecting that said gas has escaped from said chamber and said holes to thereby detect said crack.

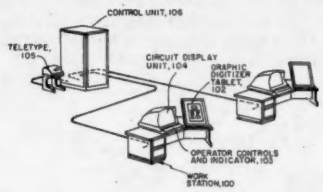
4,254,416
VARIABLE SIZE CHARACTER GENERATOR

Helmut Lelke, Southboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 691,799, Jun. 1, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,124

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—728 **28 Claims**



1. In combination:

an addressable memory for storing digital data representing a character pattern to be displayed on a display device as a plurality of rows and columns of dots;

address locations of said digital data corresponding to said rows of said character pattern as displayed at a first size;

bits of said address locations determining the presence or absence of dots at dot positions within the corresponding row of said character pattern as displayed at said first size;

means for displaying said character pattern at a second size having a different first dimension than said first size comprising means for addressing said memory to read out said digital data; and

means coupled to the output of said memory for displaying said character pattern at a third size having a different second dimension orthogonal to said first dimension than said first size comprising parallel to serial converter means.

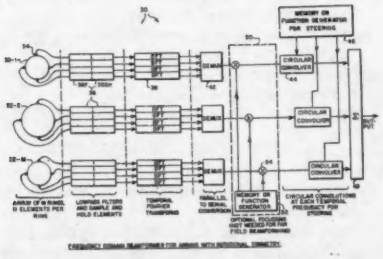
4,254,417
BEAMFORMER FOR ARRAYS WITH ROTATIONAL SYMMETRY

Jeffrey M. Speiser, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1979, Ser. No. 67,977

Int. Cl.³ G01S *3/80, 7/54;* G06F *15/34*

U.S. Cl. 343—100 SA **28 Claims**


MEMORY OR FUNCTION GENERATOR FOR STEERING
CIRCULAR CONVOLVER
CIRCULAR CONVOLVER
CIRCULAR CONVOLVER
MEMORY OR FUNCTION GENERATOR FOR STEERING
CIRCULAR CONVOLUTIONS AT EACH TEMPORAL FREQUENCY FOR STEERING
OPTIONAL EQUIZING FILT WEIGHTS FOR THIS FIELD BEAMFORMING

1. A frequency domain beamformer comprising:

a plurality of M arrays in the form of M rings, which may be of different diameters, disposed one above the other, all rings having their central axes along the same straight line, each ring having a maximum of N signal receiving elements, $3<N<300$, symmetrically disposed about the ring whether all N elements in any specific ring are present or not, the position of each element or missing element, being symmetrically disposed about the axis;

a plurality of M sets of means for filtering, an input of each means being connected to an output of an element, for permitting the filtering through of the low frequencies of the received signals;

a plurality of M sets of means for sampling-and-holding, an input of each means being connected to an output of a means for filtering;

a plurality of M sets of transform means, an input of each means being connected to an output of a sample-and-hold means, for taking a temporal discrete Fourier transform (DFT) of its input signal;

a plurality of M means for demultiplexing, each means having a set of inputs connected to the outputs of a set of DFT means, for converting their parallel input signals into serial output signals;

a plurality M of convolving means, each having an input connected to the output of a means for demultiplexing, for circularly convolving the demultiplexed signals;

means, having an input to each of the means for circularly convolving, for steering the convolved signals; and

means, whose inputs are connected to the means for convolving, for summing the steered, convolved, signals.

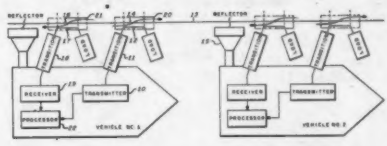
4,254,418
COLLISION AVOIDANCE SYSTEM USING SHORT PULSE SIGNAL REFLECTOMETRY

Harry M. Cronson; Gerald F. Ross; Basrur R. Rao, all of Lexington, Mass.; Werner Lerchenmueller, Bellevue, and Prentis B. Drew, Kirkland, both of Wash., assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 23, 1978, Ser. No. 936,440

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—112 CA **6 Claims**



1. A collision avoidance system for a vehicle travelling a prescribed route with a wave guiding structure extending therealong comprising:

means on said vehicle and coupled to said wave guiding structure for transmitting short pulse signals;

means on said vehicle and coupled to said wave guiding structure for receiving short pulses reflected from an obstacle preceding said vehicle and for providing at an output terminal thereof short pulse signals representative of said received reflected short pulses;

a transmission line coupled at one end to said transmitting means and at the other end to said output terminal of said receiver means, said transmission line having taps thereon with electrical spacings therebetween which are substantially equal to a distant measurement increment; and

means coupled to said taps for determining and indicating a tap at which a short pulse coupled to said one end and a short pulse coupled to said other end coincide, whereby the distance between said vehicle and said obstacle is determined by noting said coincidence tap for said short pulses coupled from either end of said transmission line.

4,254,419
MOBILE ANTENNA RAISING AND LOWERING DEVICE

Kenneth W. Noddin, Wenonah, N.J., assignor to William R. Shockley, Mantua, N.J.

Filed Jul. 6, 1979, Ser. No. 55,186

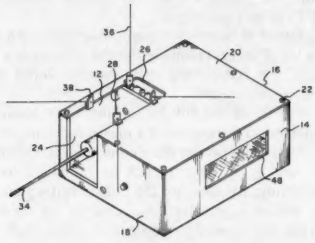
Int. Cl.³ H01Q *1/32*

U.S. Cl. 343—715 **9 Claims**

1. An antenna raising and lowering device comprising:

a housing;

a substantially planar antenna mounting plate means pivotally secured to said housing and being adapted to be pivotted about a substantially horizontal axis between an inoperative position wherein said plate means is substantially vertically disposed within said housing and an operative position wherein said plate means is substantially horizontally disposed and further being adapted to support an antenna thereon;



a cam surface within said housing, said cam surface being adapted to engage part of said plate means for moving the same between said operative and said inoperative positions; elongated screw means and

motor means for rotating said screw means for moving said cam surface.

4,254,420

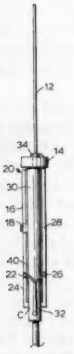
WHIP ANTENNA OF REDUCED LENGTH FOR VHF RADIO COMMUNICATION

John C. Peoples, 100 E. 24th St., Riviera Beach, Fla. 33404

Filed Jan. 7, 1980, Ser. No. 110,121

Int. Cl.³ H01Q *1/32, 9/18*

U.S. Cl. 343—715 **5 Claims**



1. A whip antenna of reduced length for VHF radio communication, comprised of:

a hollow, cylindrical base;

a hollow, cylindrical, waterproof housing, said hollow, cylindrical waterproof housing being sized to sealingly enclose said hollow, cylindrical base;

a cylindrical insulator cap, said cylindrical insulator cap being fixed to the top of said hollow, cylindrical base;

a conductive connector fixed to the top surface of said cylindrical, insulator cap;

an adjustable circuit with an input and an output, said adjustable circuit being attached to said hollow, cylindrical base;

a coaxial cable transmission line having one end electrically connected through said hollow, cylindrical, waterproof housing to the input of said adjustable circuit, said adjustable circuit having an input impedance which matches the impedance of said coaxial cable transmission line, and the other end electrically connected to a mating connector for mating with a transceiver;

a whip of three half-wave lengths having its lower end electrically connected to said conductive connector, said conductive connector being electrically connected to the output of said adjustable circuit, said adjustable circuit being adjusted such that there is a gain in the radiated signal level which is acceptable for VHF radio communication use.

4,254,421

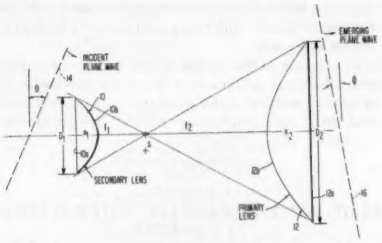
INTEGRATED CONFOCAL ELECTROMAGNETIC WAVE LENS AND FEED ANTENNA SYSTEM

Randall W. Kreutel, Jr., Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 5, 1979, Ser. No. 100,621

Int. Cl.³ H01Q *15/08*

U.S. Cl. 343—754 **8 Claims**



1. An integrated confocal electromagnetic wave lens and feed antenna system, said system comprising:

spaced, coaxial, hyperboloidal primary and secondary lenses,

each of said lenses having a planar surface and a convex surface described by a hyperboloidal eccentricity equal to the refractive index of the lens,

said lenses being mounted with their convex surfaces facing each other,

said lenses having equal beam deviation factors, whereby for small scan angles,

$$\phi = m\theta$$

where;

ϕ is the angle of incidence with the secondary lens of the incident plane wave,

m equals the magnification of the lens system, and

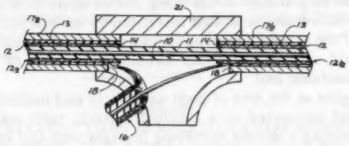
ϕ equals the angle of emergence of the emergent plane wave from the primary lens,

said system further comprising; a feed array integrated with said secondary lens, said feed array comprising; array elements printed on a substrate, said substrate at said array elements being connected directly to and overlying the planar surface of said secondary lens, said substrate being backed by a ground plane and an electromagnetic wave beam forming and control network being directly connected to and overlying said substrate at said ground plane.

4,254,422
DIPOLE ANTENNA FED BY COAXIAL ACTIVE ROD

Vernon J. Kloepfer, 389 W. Park, Grants Pass, Oreg. 97526, and Jimmy B. Russell, Box 204, Sagle, Id. 83860

Filed Dec. 20, 1979, Ser. No. 105,583
Int. Cl.³ H01Q 9/16
U.S. Cl. 343—792 12 Claims

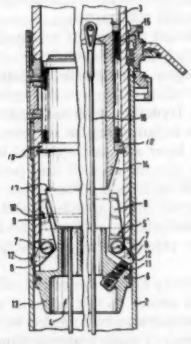


1. In an antenna:
a primary element having a continuous center conductor and a surrounding outer conductor concentrically spaced about the center conductor;
the physical length of the primary element being equal to a halfwave section for a selected frequency at its velocity factor;
the primary element including direct electrical connections between the corresponding outer ends of the center conductor and the outer conductor;
the outer conductor being axially interrupted at its midpoint to present two spaced inner ends adapted to be connected respectively to the two conductors of a feed line;
and a secondary element of electrically conductive material arranged parallel to the primary element and overlapping its length, the secondary element having no direct electrical connection to the primary element, but being in such close physical proximity to it so as to assure capacitive and inductive coupling between the primary and secondary elements of the antenna.

4,254,423
TELESCOPIC EQUIPMENT CARRIER INCLUDING ANTENNAS

Gerhard Reinhard, Bremen, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,092
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1977, 2744293
Int. Cl.³ H01Q 1/10
U.S. Cl. 343—883 6 Claims

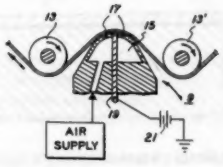


1. Mast-like equipment carrier constructed from a plurality of telescoped tubes, in which the upper one is closed to permit pressurization of the interior of the tubes, there being pressure means to pressurize the interior of the tubes to extend the telescoping arrangement and set up the mast, the improvement comprising:
an insert for each of those of said tubes above the lowest one, the respective insert being disposed at the bottom of the respective tube, each one of said inserts including at least one spring-biased latch, having a latch arm engaging a recess in the respective next-lower one of said telescoped tubes;
conical unlatch means on at least the insert or inserts on those of said tubes above the second-lowest one, to engage the spring-biased latch on the respective insert underneath, for unlatching the latch; and
further conical unlatch means normally disengaged from, but operable to engage the spring-biased latch on the insert of the highest one of the tubes for unlatching the latter latch.

4,254,424
ELECTROSTATIC RECORDING APPARATUS

Dolf Landheer, Toronto, Canada; Shy-Shung Hwang, Penfield, N.Y.; Charles Nesta, Rochester, N.Y., and Gino F. Squassoni, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,359
Int. Cl.³ G01D 15/16, 15/24
U.S. Cl. 346—139 C 10 Claims



1. An electrostatic recording apparatus for recording information on a dielectric web comprising an electrostatic recorder head including a stylus having a tip in a fixed position; means for directing a web in proximity to said recorder head, said web comprising a dielectric surface facing said recorder head and a conductive layer; means for maintaining a distance between said head and said web, said means comprising a fluid chamber within said head having fluid outlets comprising orifices adjacent said stylus, including means for producing a fluid flow between said head and web to create a fluid cushion for supporting said web; and means for selectively applying a voltage between said stylus and the conductive layer in said web; said voltage being of sufficient magnitude to create ionization across said distance.

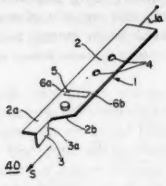
4,254,425
ELECTRIC DISCHARGE PRINTING DEVICE HAVING A LAMINAR STYLUS

Leif Nielsen, Borkerd, Denmark, assignor to Rex Rotary International Corporation A/S, Denmark

Filed Jul. 3, 1978, Ser. No. 921,793
Claims priority, application United Kingdom, Jul. 6, 1977, 28411/77; Jul. 6, 1977, 28412/77
Int. Cl.³ G01D 15/06, 15/16
U.S. Cl. 346—162 12 Claims

1. An electric discharge printing device, including a movable support surface for a recording medium, and at least one stylus comprising: a conductive lamina arranged generally perpendicular to said support surface and generally parallel to the direction of movement of said support surface; first and second edges of said lamina defining a corner which is contiguous to said recording medium support surface and which, in use of the stylus, serves as the stylus tip; and connecting means for electrically energizing said lamina for electric discharge

printing on the recording medium in use of the device, said first edge being shallowly inclined with respect to said support



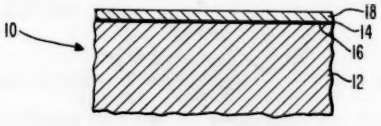
surface and said second edge being more steeply inclined with respect to said support surface.

4,254,426

METHOD AND STRUCTURE FOR PASSIVATING SEMICONDUCTOR MATERIAL

Jacques I. Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 9, 1979, Ser. No. 37,379
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **11 Claims**



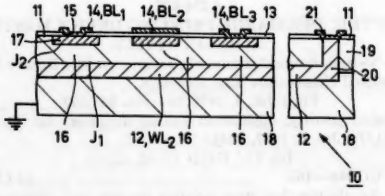
8. In a semiconductor structure having a layer of hydrogenated amorphous silicon adjacent a surface of a crystalline semiconductor substrate, the improvement comprising a film containing carbon atoms disposed on said surface between said substrate and said layer of hydrogenated amorphous silicon.

4,254,427

SEMICONDUCTOR DEVICE HAVING A COMPACT READ-ONLY MEMORY

Jan Lohstroh, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,138
Claims priority, application Netherlands, Feb. 10, 1978, 7801532
Int. Cl.³ H01L *29/90, 29/56, 27/10, 29/04*
U.S. Cl. 357—13 **7 Claims**



1. A semiconductor device having a read-only memory, which comprises:

a semiconductor body having a surface-adjoining region substantially of a first type conductivity;

a plurality of juxtaposed mutually substantially parallel strip-shaped zones of a second type conductivity opposite to that of the first and in the surface-adjoining region;

an insulating layer on the surface of said surface-adjoining region;

a plurality of juxtaposed, mutually substantially parallel strip-shaped conductor tracks on the insulating layer and crossing the strip-shaped zones;

at least one window in said insulating layer, through which a selected conductor track can be electrically coupled to a selected strip-shaped zone crossing the conductor track, the strip-shaped zones being spaced apart from each said window and separated therefrom by an intermediate part of the surface-adjoining region, said intermediate part and said strip-shaped zones forming a plurality of first p-n junctions; and

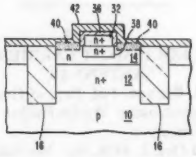
a region at the area of each window in said insulating layer and connected to a conductor track, each said region forming a second, rectifying junction with said intermediate part of the surface-adjoining region, each said second junction being separated from said first junctions by said intermediate part of the surface-adjoining region, and the doping concentration of said intermediate part and the distance between said first and second junctions each being sufficiently small such that connections can be formed by punch-through between at least one crossing track and strip-shaped zone by reversely biasing at least one of said junctions.

4,254,428

SELF-ALIGNED SCHOTTKY DIODE STRUCTURE AND METHOD OF FABRICATION

George C. Feth, Yorktown Heights, N.Y., and Siegfried K. Wiedmann, Stuttgart, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,073
Int. Cl.³ H01L *29/48*
U.S. Cl. 357—15 **7 Claims**



1. A Schottky-barrier diode structure comprising:

a semiconductor substrate;

a doped subdiffusion layer of relatively high conductivity disposed on said substrate;

a layer of epitaxial material of relatively low conductivity disposed on said subdiffusion layer;

an insulating region of recessed oxide disposed in said structure and extending down into said epitaxial layer, into said subdiffusion layer and into said substrate to form a recessed oxide isolation region surrounding an area of said subdiffusion layer and said epitaxial layer to define a perimeter, the interior area of said perimeter bounded by said recessed oxide being the active device area of said Schottky-barrier diode structure, and wherein said layer of epitaxial material in said active device area functions as the cathode electrode of said Schottky-barrier diode structure;

a body of relatively highly doped polysilicon located on top of and in the center of said layer of epitaxial material in said active device area surrounded by said recessed oxide;

an insulating layer of oxide material disposed on the top and sides of said body of relatively highly doped polysilicon;

a diffusion region located below said body of highly doped polysilicon and extending into said layer of epitaxial material, said body of highly doped polysilicon and said diffusion region therebelow functioning as an electrical cath-

ode contact for said epitaxial layer cathode electrode; and first and second regions of Schottky-barrier diode anode material disposed in said epitaxial layer in said active device area on either side of said body of polysilicon material, said first and second regions of said Schottky-barrier diode anode material being bounded by said recessed oxide and said oxide on the sides of said body of polysilicon material to form a Schottky-barrier diode structure wherein said cathode contact is disposed in between said anode contacts and is isolated from said anode contacts by said oxide insulation on the sides thereof.

4,254,429

HETERO JUNCTION SEMICONDUCTOR DEVICE

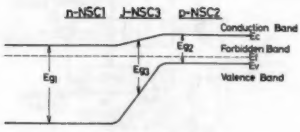
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 9, 1979, Ser. No. 55,650

Claims priority, application Japan, Jul. 8, 1978, 53-83467; Jul. 8, 1978, 53-83468

Int. Cl.³ H01L *29/161*

U.S. Cl. 357—16 **7 Claims**



1. A hetero junction semiconductor device having at least one inter-semiconductor hetero junction, which comprises at least a first non-single-crystal semiconductor region having a first energy gap, a second non-single-crystal semiconductor region having a second energy gap different from the first energy gap, and a third non-single-crystal semiconductor region defined between the first and second semiconductor regions to serve as a hetero junction, and wherein the third semiconductor region has an energy gap which successively changes from the first energy gap on the side of the first semiconductor region to the second energy gap on the side of the second semiconductor region, and wherein the first, second and third semiconductor regions have doped therein a recombination center neutralizer.

4,254,430

SEMI-CONDUCTOR ARRANGEMENT

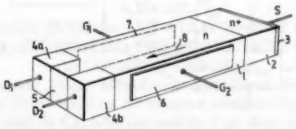
Heinz Beneking, Aachen, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,615

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804165

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **15 Claims**



1. In a semi-conductor field effect device including a semiconductor body of a first conductivity type having a source region and a plurality of drain regions formed therein so as to define a current carrying channel region between said source and said drain regions, the improvement comprising means, including at least two edge layers disposed on opposite sides of said channel region, for producing a trough shaped potential curve having a defined minimum point in said current carrying channel in a direction transverse to the direction of carrier flow by superposition of potential curve emanating from said edge layers, whereby triggering of a selected one of said drain regions is possible by shifting said minimum point of said potential curve in said direction transverse to said carrier flow.

4,254,431

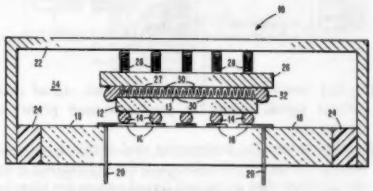
RESTORABLE BACKBOND FOR LSI CHIPS USING LIQUID METAL COATED DENDRITES

Robert Babuka, Vestal; Robert E. Heath, Endwell; George J. Saxenmeyer, Jr., Apalachin, all of N.Y., and Lewis K. Schultz, Sayre, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1979, Ser. No. 50,390

Int. Cl.³ H01L *25/04, 23/02, 23/48*

U.S. Cl. 357—82 **6 Claims**



1. Apparatus for enhancing thermal conductivity in and heat removal from a semiconductor integrated chip implemented module, said apparatus comprising:

(a) a module container formed of a low thermal resistance material;

(b) a semiconductor chip having a plurality of heat producing microcircuits thereon disposed within said module container, one of said chip surfaces having a plurality of metallic dendritic projections extending therefrom;

(c) a heat sink, one surface thereof also having a plurality of metallic dendritic projections extending therefrom, said heat sink being disposed within said module so that its dendritic projections are in alignment with and face those of said chip;

(d) a layer of liquid metal alloy disposed between said facing surfaces of said chip and said heat sink; and

(e) biasing means, adapted to thermally link said heat sink and said module container, for urging said facing surfaces together so that said respective dendritic projections thereof all pierce said liquid metal alloy layer to form a unitary heat transfer path from said chip to said module container.

4,254,432

PURITY DETECTION APPARATUS FOR COLOR PICTURE TUBES

Kozo Nakahata, Yokohama, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 26, 1978, Ser. No. 872,578

Claims priority, application Japan, May 23, 1977, 52-58772

Int. Cl.³ H04N *9/62*

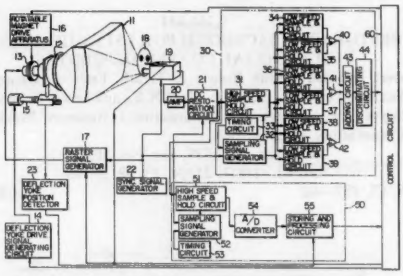
U.S. Cl. 358—10 **9 Claims**

1. An apparatus for detecting color purity of a color picture tube having an in-line type electron gun assembly, comprising:

raster generating means for supplying to the color picture tube having beam deflection adjusting means a display signal which generates a raster of a uniform color over the whole display screen of a color picture tube which is assumed to have been properly adjusted;

an optical filter for allowing the component of said uniform color to pass therethrough predominantly while suppressing the other components;

pick-up means for picking up said raster through said optical filter by scanning the display screen of said color picture tube on a line base in the horizontal direction and on a frame base in the vertical direction, thereby to produce a video signal representative of luminance at picture elements of said raster;



sampling means for sampling said video signal thereby to extract signal values at predetermined points on said screen; and

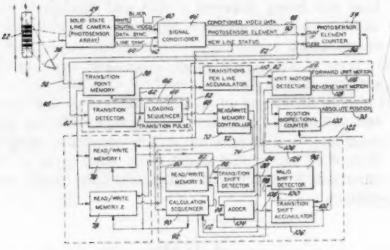
detection means for comparing said extracted signal values with predetermined values and for generating a detection signal when said extracted signal values are identical with said predetermined values to thereby indicate color purity.

4,254,433

VISUAL MOTION TRACKING SYSTEM

Robert Dewar, Jr., Troy, and Rene M. Iadipaolo, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 25, 1979, Ser. No. 51,622
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—105 **4 Claims**



1. An optical and electronic motion tracking system for measuring movement of an object comprising

a pattern of contrasting light and dark regions on the object for movement therewith,

a lens focused on the pattern to produce an image of the pattern in an image plane, a linear array of equally spaced photosensor elements in the plane of the focused image wherein the element spacing corresponds to a certain object displacement, and each element is energized to a high or low state according to the brightness of the image focused thereon, whereby movement of the object effect a change of state of at least one of the elements,

scan means for interrogating the energization state of the elements and generating output signals representing the states of the elements and for periodically repeating the interrogation for subsequent array scans,

means responsive to the output signals for generating a transition signal representing each image transition between light and dark regions,

a circuit responsive to the transition signals for comparing the transition signals for each scan with that of a preceding scan to thereby detect a difference in transition signals which denotes the amount and direction of movement of the focused image relative to the photosensor elements,

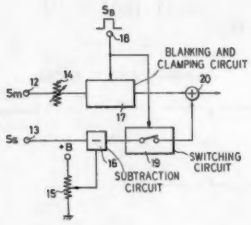
and means responsive to said detected difference to produce a signal representing net object movement over a time period encompassing many scans.

4,254,434

VIDEO SIGNAL MIXING SYSTEM

Toshio Suzuki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,168
Claims priority, application Japan, Nov. 24, 1978, 53-145104
Int. Cl.[3] H04N *5/16, 7/08, 5/22*
U.S. Cl. 358—147 **7 Claims**



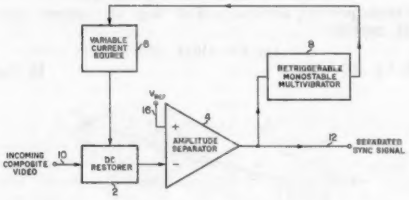
1. A method for operating a video signal mixing system, comprising: forming a blanking portion at a predetermined interval in a first video signal by a blanking signal; detecting and holding a pedestal level of said first video signal and clamping a blanking level of said blanking portion at the held pedestal level of said first video signal with the application of said blanking signal; and inserting a second video signal into the formed blanking portion of the first video signal.

4,254,435

NOISE ELIMINATOR FOR TELEVISION SYNCHRONIZING SIGNAL SEPARATING CIRCUITS

Birney D. Dayton, Nevada City; William L. Rorden, and Leon J. Stanger, both of Grass Valley, all of Calif., assignors to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Apr. 30, 1979, Ser. No. 28,306
Int. Cl.[3] H04N *5/08*
U.S. Cl. 358—155 **6 Claims**



1. A television synchronizing signal separating circuit comprising:

a dc restoration circuit for receiving a composite video signal and adding a dc voltage level thereto, the recovery time of said restoration circuit depending upon the amount of current applied thereto;

a variable current source for supplying current to said dc restoration circuit, the output level of said variable cur-

rent source varying according to the level of an input pulse applied thereto;

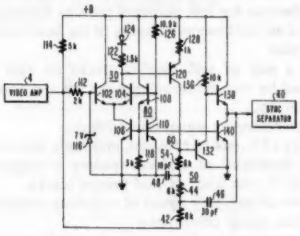
an amplitude separator coupled to receive a dc-restored video signal from said dc restoration circuit for producing a separated sync signal therefrom; and

a retriggerable monostable multivibrator having a trigger input terminal for receiving said separated sync signal and an output terminal said output terminal being connected to said variable output current source for applying said input pulse thereto and thereby increasing its output current.

4,254,436
NOISE CANCELLATION CIRCUIT

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1978, Ser. No. 934,829
Int. Cl.³ H04N *5/08, 5/21*
U.S. Cl. 358—157 **9 Claims**



1. A noise cancellation circuit for cancelling impulse noise in a composite video signal comprising:

a source of composite video signals which may be contaminated with impulse noise;

noise inverting means coupled to said source of composite video signals for inverting impulse noise in said composite video signals which exceeds a predetermined threshold level;

a resistive signal path having an input terminal coupled to said source of composite video signals and an output terminal;

amplifying means having an input terminal coupled to the output of said noise inverting means and to the output terminal of said resistive signal path, and having an output terminal for producing a substantially noise-free composite video signal;

a feedback capacitor having a first terminal coupled to said resistive signal path at a first point remote from said input terminal of said resistive signal path, and having a second terminal coupled to the output terminal of said amplifying means,

wherein said resistive signal path, said feedback capacitor and said amplifying means comprise an active filter.

4,254,437
IMAGE INTENSIFIER ATTACHMENT FOR ATTACHMENT TO THE FRONT LENS OF A TELEVISION CAMERA

Hans-Wolfgang Funk, Hirschberg, and Bernd Engel, Gross-Gerau, both of Fed. Rep. of Germany, assignors to Proxitronic Funk GmbH & Co. KG, Darmstadt, Fed. Rep. of Germany

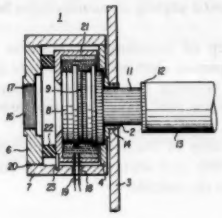
Filed Jun. 29, 1979, Ser. No. 53,264
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828479
Int. Cl.³ H04N *5/30*
U.S. Cl. 358—211 **20 Claims**

1. An image intensifier attachment for a television camera, wherein the attachment is positioned between an objective lens located exterior of a housing for the television camera and a pick-up tube within the housing, and wherein the attachment is retained in a standard threaded aperture in the housing ordinarily used for an objective lens, the attachment comprising:

image intensifier means;

an attachment housing for containing the image intensifier, the attachment housing having an input end and an output end, the input end having an opening therethrough for receiving the objective lens and the output end having an opening for alignment with the pick-up tube;

an exteriorly threaded annulus means on the attachment housing for securing the attachment housing in the standard threaded aperture in the television camera housing;



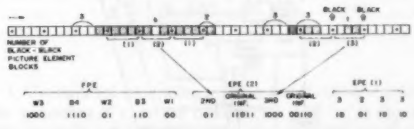
resilient means disposed between the input end of the attachment housing and the image intensifier means, and

a fiber optics block disposed through the opening in the output end of the attachment housing between the image intensifier means and pick-up tube; said fiber optics block having a length greater than the distance between the pick-up tube and the output end of the housing wherein there is a space between the image intensifier means and the output end of the housing whereby the resilient means biases the fiber optics block against the pick-up tube means by bearing against the image intensifier means.

4,254,438
CODING METHOD FOR FACSIMILE SIGNAL

Yasuhiro Yamazaki, Hiratsuka; Yasushi Wakahara, Yokohama, and Kazunori Matsuo, Hoya, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Oct. 26, 1979, Ser. No. 88,478
Claims priority, application Japan, Dec. 13, 1978, 53-153189; Dec. 21, 1978, 53-159491
Int. Cl.³ H04N *7/12*
U.S. Cl. 358—261 **7 Claims**



1. In a one-dimensional coding method for a facsimile signal in which a binary facsimile signal obtained by scanning an original picture and by successively sampling into picture elements is applied as an input and the position of an information change picture element having changed from one to the other of a binary signal value is encoded and outputted for each line, an improvement of the method comprising:

a first step of sampling from the facsimile signal of one line, as fundamental picture elements, picture elements positioned every predetermined number of picture elements in the scanning line direction;

a second step of detecting an information change in elemental picture elements of each picture element block between adjacent ones of the fundamental picture elements;

a third step of once converting to black the fundamental

picture elements on both sides of the picture element block when more than two information changes are detected in the second step;

a fourth step of encoding the numbers of successive white and black fundamental picture elements into run length codes after the third step;

a fifth step of encoding the position of that one of black-black picture element blocks obtained by the third step and sandwiched between the adjacent black fundamental picture elements which has more than two information changes in the elemental picture elements, and original information of the elemental picture elements in the black-black picture element block before conversion of the fundamental picture elements on the both sides thereof to black;

a sixth step of encoding the position of an information change picture element in the picture element block sandwiched between the adjacent fundamental picture elements when they have their information changed from white to black or vice versa; and

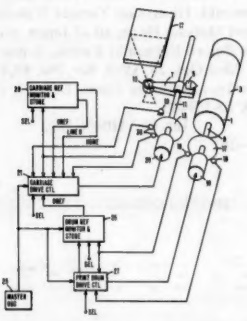
a seventh step of combining the encoded outputs of the fourth, fifth and sixth steps into a composite signal for output to the outside.

4,254,439

FACSIMILE MID-PAGE RESTART

Raymond L. Fowler, Boulder, and Timothy L. Schneider, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,748
Int. Cl.³ H04N *1/36*
U.S. Cl. 358—265 **23 Claims**



1. In a facsimile system, apparatus for restarting a scanning carriage in the middle of scanning an image without overlapping or splitting the image when the scan operation is interrupted and restarted, said apparatus comprising:

means for generating false, line reference signals having a fixed frequency relationship to the actual line reference signals for the image being scanned;

means for synchronizing the movement of the carriage to the false, line reference signals;

means for storing the synchronization conditions existing at the time of the interrupt; and

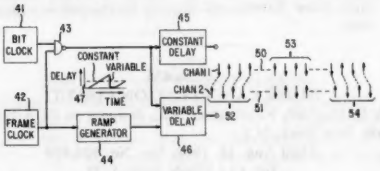
means connected to said storing means for resynchronizing the carriage upon restart to the synchronization conditions stored by said storing means at the time of interrupt.

4,254,440

MAGNETIC TAPE HEAD ALIGNMENT

David W. Martin, Morris Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 6, 1979, Ser. No. 64,173
Int. Cl.³ G11B *5/43, 21/10*
U.S. Cl. 360—76 **7 Claims**



1. A system for establishing alignment of a transducing head with respect to a moving magnetic recording medium having recorded thereon for test purposes parallel information tracks by means of an oscilloscopic display of the head output characterized in that

at least a pair of said parallel tracks on said medium is spanned by said transducing head for simultaneous reading thereby,

a uniform reference signal comprising

a plurality of bursts of constant-amplitude alternate-polarity pulse transitions of uniform spacing is magnetically impressed on one track of said pair of tracks,

a nonuniform auxiliary signal of matching amplitude to said reference signal comprising

a matching plurality of vertically aligned bursts of constant-amplitude alternate-polarity pulse transitions of continuously increasing spacing with the spacing at the center of each burst being equal to the uniform spacing on said one track but the polarity being opposite is magnetically impressed on the other track of said pair of tracks, and

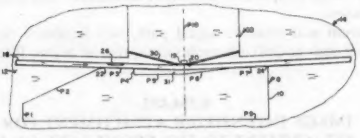
said reference and auxiliary signals are mixed in the said transducing head to form an envelope pattern suitable for oscilloscopic display.

4,254,441

DIGITAL CODE READER

Alan J. Fisher, 5711 Tannahill Cir., Huntsville, Ala. 35802

Division of Ser. No. 772,081, Feb. 25, 1977, Pat. No. 4,141,494. This application Feb. 22, 1979, Ser. No. 13,907
Int. Cl.³ H04N *9/54;* **G06K** *7/08, 13/00;* **G11B** *25/04*
U.S. Cl. 360—88 **4 Claims**



1. A magnetic transducer assembly for detecting a magnetic code recorded on a magnetic track on a thin, rigid, but bendable plastic card as such a card is passed through said assembly along a selected line of direction comprising:

a magnetic detection head having a generally convex curved responsive face surface positioned along said line of direction; and

a guide member comprising:

separated entrance and exit lengths of bearing surfaces positioned and spaced from said surface of said mag-

netic detection head, and each said bearing surface lying in a discrete plane, wherein extensions of planes of said bearing surfaces form an obtuse angle at a line in a plane normal to and centrally through said surface of said magnetic detection head;

whereby a card moved along said line of direction is bent by virtue of engagement with the combination of said entrance bearing surfaces, said surface of said head, and said exit bearing surface, causing said card to be maintained in frictional contact with said magnetic detection head.

4,254,442

CIRCUIT FOR THE PROTECTION OF TELEPHONE LINES

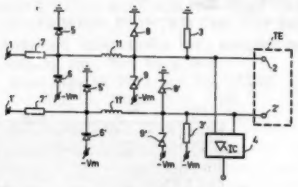
Eise C. Dijkmans, and Franciscus A. C. M. Schoofs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 12, 1977, Ser. No. 859,543

Claims priority, application Netherlands, Dec. 20, 1976, 7614118

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—56 **7 Claims**



1. An arrangement for protecting a semiconductor circuit coupled to telephone lines from overvoltages occurring on said telephone lines comprising, a first pair of semiconductor diodes connected in series and with the same polarity between two points of constant potential such that the diodes are normally blocked, means connecting the junction between the diodes to a wire of the telephone line so that if overvoltages occur on said telephone line the voltage of the wire is clamped to the potential of the one or the other point of constant potential, a second pair of semiconductor zener diodes connected in series and with the same polarity between two points of constant potential such that the diodes are normally blocked, means connecting the junction between the second pair of diodes to said wire of the telephone line, and an impedance element connected in the wire of the telephone line between the junction with the first pair of diodes and the junction with the second pair of diodes, and wherein the potential range between the points of constant potential of the second pair of diodes is greater than or equal to that of the first diode pair.

4,254,443

INPUT SURGE PROTECTION FOR CONVERTER CIRCUIT

Thomas G. Wilson, Jr., Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,382

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—56 **5 Claims**

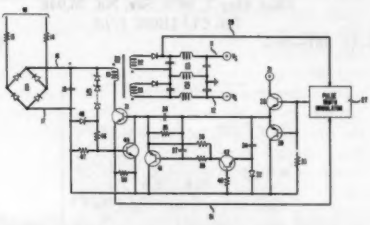
1. A protection circuit for preventing excessive voltage from damaging a semiconductor switch exposed to said excessive voltages

CHARACTERIZED BY

a plurality of normally non-conductive voltage breakdown devices connected in series directly across a positive input lead and a negative input lead, and responsive to said excessive voltages to permit a current to flow through said breakdown devices,

means including at least one of said breakdown devices for providing a control voltage in the presence of said excessive voltages, and

means responsive to said control voltage for disabling said semiconductor switch,



whereby said normally non-conductive devices limit the voltage between said input leads and simultaneously protect said semiconductor switch from damage due to said excessive voltages.

4,254,444

MULTIPHASE UNDERVOLTAGE TRIPPING CIRCUITRY FOR ELECTRICAL POWER SUPPLY NETWORKS

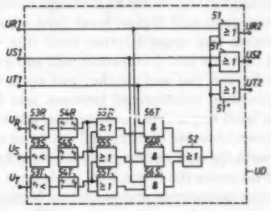
Leif Eriksson, Sala, Sweden, and Salomon Liberman, Ra'anana, Israel, assignors to ASEA Aktiebolag, Vesteras, Sweden

Continuation-in-part of Ser. No. 964,199, Nov. 28, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,563

Claims priority, application Sweden, Nov. 28, 1977, 7713409

Int. Cl.³ H02H *3/28*

U.S. Cl. 361—82 **4 Claims**



1. Circuitry for generating tripping and blocking signals for the protection of electrical components included in electrical power supply networks as a result of the occurrence of faults therein, comprising:

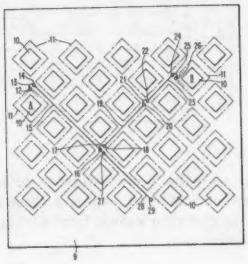
means for generation of respective tripping signals and blocking signals for each phase of the electrical power supply network, in dependence on whether the fault lies ahead or behind the electrical component to be protected, respectively, in response to measurement of the voltage and current associated with transient waves generated by faults associated with each phase of the electrical power supply network; and

undervoltage detector means responsive to the generation of a tripping signal upon the occurrence of a single phase fault and for sensing an undervoltage in another phase of the electrical power supply network to generate multiphase pole tripping signals before reclosing of the faulty phase.

4,254,445
DISCRETIONARY FLY WIRE CHIP INTERCONNECTION

Chung W. Ho, Chappaqua, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1979, Ser. No. 36,946
Int. Cl.[3] H05K 1/18
U.S. Cl. 361—392 9 Claims



1. A module for an array of integrated circuit chips said module having an upper surface with a set of pads for connection thereto and a fan-out area with fan-out pads surrounding said chips and metallization beneath the surface providing standard connections between pads connected to said chips, said chips being arranged upon said module in a substantially orthogonal pattern upon said upper surface with engineering change metallization deposited upon said upper surface adjacent to said fan-out areas, the improvement comprising a plurality of generally either parallel or orthogonal engineering change lines adjacent to and between said chips and said fan-out pads upon said upper surface, said engineering change lines being arranged heirarchically with higher level and lower level lines, said higher level lines having the greater lengths and said lower level lines having the shorter lengths with successive levels of lines in said heirarchy generally being oriented orthogonally with respect to each other, with terminal pads located at one of the ends of said lower level lines and pads located upon said higher level lines adjacent to a juxtaposed terminal pad upon a lower level line with a fly wire connected between said juxtaposed pads and a fly wire bonded between a fan-out pad and another pad upon said lower level line for providing a connected between said fan-out pad and said higher level engineering change line, whereby engineering change connections are constructed upon the upper surface of a module with fly wire connections which are extremely short in order to minimize the space, bulk, resistance, and inductance of the fly wire connection and permit such engineering change interconnections to be made between different chips.

4,254,446
MODULAR, HYBRID INTEGRATED CIRCUIT ASSEMBLY

Ric L. Peoples, 1027 Cynthia La., San Jose, Calif. 95129

Filed Aug. 30, 1979, Ser. No. 71,234
Int. Cl.[3] H01G 4/02; H01L 23/02, 23/16
U.S. Cl. 361—383 18 Claims

1. A modular, hybrid integrated circuit assembly comprising:

a module carrier including

a header end portion,

a compression end portion,

a plurality of bus-bar means extending at least partially between said header end portion and said compression end portion, at least one of said bus-bar means being provided with a plurality of electrical contacts, and a plurality of lead-pins electrically coupled to said contacts, and

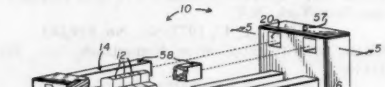
biasing means coupled to said compression end portion; and

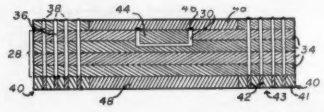
at least two integrated circuit modules compressively held between said header end portion and said compression end portion by said biasing means, each module including

substrate means provided with a concavity at a first surface thereof,

an integrated circuit die positioned within said concavity, said die being provided with a plurality of bonding pads,

inter-modular interface means including a first regions of said first surface having a plurality of metalized contacts, a second region of a second surface of said substrate having a plurality of metalized contacts, and a elastomeric coupler including a mass of resistive material interspersed with lengths of conductive material, said elastomeric coupler being attached to one of said first surface and said second surface so said lengths of conductive material are electrically coupled to said metalized contacts, whereby when a first surface side of a first module is pressed against a second surface side of a second module said elastomeric coupler couples said metalized contacts of said first region and said second region together,





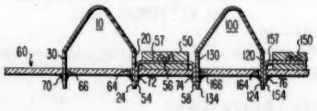
extra-modular interface means formed on the periphery of said substrate means having at least one contact engagable with a contact of said bus-bar means, and

coupling means for coupling said contacts of said inter-modular interface means and of said extra-modular interface means to said bonding pads.

4,254,447
INTEGRATED CIRCUIT HEAT DISSIPATOR

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 10, 1979, Ser. No. 28,875
Int. Cl.[3] H05K 7/20
U.S. Cl. 361—386 12 Claims



1. A thermally protected integrated circuit chip and printed circuit board mounting arrangement comprising:

a perforated printed circuit board;

an integrated circuit package enclosing said integrated circuit chip, mounted on said printed circuit board, and

including a heat conductor extending from said enclosure and inserted into a first perforation in said printed circuit board; and

a metallic heat dissipator mounted on said printed circuit board adjacent to said integrated circuit package and including two oppositely facing sides joined by a fold at the upper end of said dissipator, said fold, said sides and a portion of said printed circuit board defining an air space therebetween which is exclusive of said integrated circuit package, and first and second tabs extending from the lower ends of said sides, one of said tabs being inserted into said first perforation so as to be in contact with said heat conductor, and the other of said tabs being inserted into a second perforation spaced apart from, and located in a plane substantially parallel to, that of said first perforation,

wherein said tabs exert an opposing spring force with respect to each other so that said one tab forcibly contacts said heat conductor within said first perforation, thereby retaining said heat dissipator and said integrated circuit package on said printed circuit board.

4,254,448

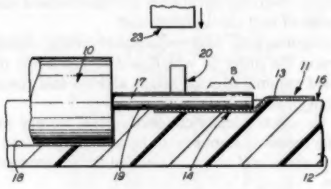
TECHNIQUES FOR ASSEMBLING ELECTRICAL COMPONENTS WITH PRINTED CIRCUIT BOARDS

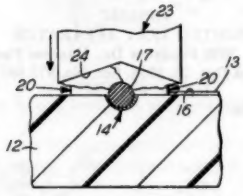
Gerald J. Martyniak, Indianapolis, Ind., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 14, 1979, Ser. No. 38,742

Int. Cl.³ H05K *3/34, 7/06*

U.S. Cl. 361—409 **18 Claims**





1. An improved method of connecting an electrical component having leads projecting therefrom with a printed circuit board having a conductive pattern deposited on a mounting surface of an insulating substrate and having lead-contact areas deposited on the substrate at locations where the leads are to be electrically connected to the printed circuit, the method being of the type including the steps of (a) placing the component on the mounting surface of the board at a predetermined position in which the leads are aligned with the contact areas, and (b) thereafter bonding the leads to the contact area, wherein the improved method comprises the additional steps of:

(c) forming a plurality of thermoplastic pins projecting outward from the substrate at locations adjacent to positions where portions of the component are placed in step (a); and

(d) after step (a) and before step (b), heating and forming end portions of the pins about the adjacent portions of the component so as to form plastic locking sections that mechanically fasten the adjacent portions of the component to the board at the predetermined position and so that the leads align with the lead-contact areas of the printed circuit for the lead-bonding step.

4,254,449

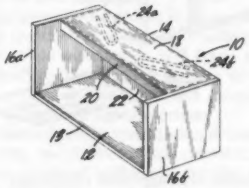
TASK LIGHTING SYSTEM

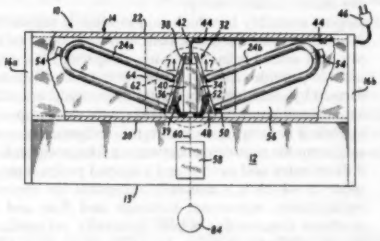
Roger Benasutti, St. Paul, and Thomas Koenig, Stillwater, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 838,764, Oct. 3, 1977, Pat. No. 4,161,767. This application Oct. 10, 1978, Ser. No. 949,761

Int. Cl.³ A61G *13/00;* **F21V** *13/00*

U.S. Cl. 362—33 **32 Claims**





1. A task lighting system for illuminating a work surface comprising:

(a) a hood having a substantially horizontal top, vertically depending left and right ends, a vertically depending front edge, and a rear wall forming a conclave volume;

(b) a generally triangular fixture laterally centrally located in said hood;

(c) said fixture having first and second substantially vertical sides, said first and second sides having equal lengths and an included angle between them of from about 18 to about 160 degrees;

(d) the third side of said fixture being parallel to said front edge;

(e) at least one socket means in each of said first and second sides for holding the end of a fluorescent tube with the axis of said fluorescent tube substantially perpendicular to said side;

(f) a screen centrally located in said hood below said fluorescent tube;

(g) said screen extending from said front edge to said rear wall and laterally at least two inches each side of the center of said hood; and

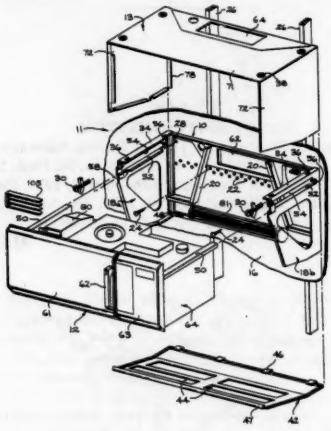
(h) said screen modifying the light in its area.

4,254,450

LAMP ASSEMBLY FOR COMBINATION MICROWAVE OVEN AND EXHAUST VENT

James A. White, Louisville, and Frank L. Rice, Jeffersontown, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 21, 1978, Ser. No. 935,444
Int. Cl.³ F21V *33/00*; F27D *21/02*
U.S. Cl. 362—92 **10 Claims**



1. A microwave oven appliance comprising:
a microwave oven operating module including a magnetron housing, an oven cavity, a front opening door for providing access to said cavity;
a support assembly in which said module is supported, said module adapted for movement into and out of said assembly, said assembly including a wall spaced from said module to provide a front accessible space therebetween formed by insertion of said module into said assembly; and
a lamp assembly positioned in said space, said lamp assembly including a lamp and means for reciprocally mounting said lamp for movement between a first position in which it illuminates said cavity, and a second position out of said space in which it is manually accessible for removal and replacement, movement between said first and second positions transversing a path generally perpendicular to the plane of said door.

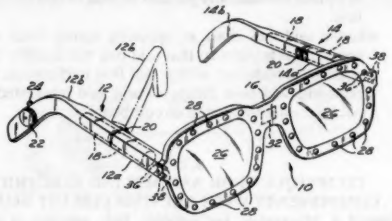
4,254,451

SEQUENTIAL FLASHING DEVICE FOR PERSONAL ORNAMENTATION

James A. Cochran, Jr., 452 Hill St., Laguna Beach, Calif. 92651

Filed Oct. 27, 1978, Ser. No. 955,325
Int. Cl.³ F21L *15/08*
U.S. Cl. 362—103 **8 Claims**

1. A device for producing a visual effect through the sequential flashing of light-emitting elements, comprising:
(a) an eyeglass frame having a pair of temple pieces foldably attached by hinges to a lens-holding portion;
(b) a plurality of light-emitting elements disposed in said lens-holding portion, said light-emitting elements being arranged in a circuit configuration wherein they are addressable in X-Y matrix fashion corresponding to the rows and columns of an X-Y matrix;
(c) means in at least one of said temple pieces for holding a battery to supply current to said light-emitting elements;
(d) electronic switching means in said frame for driving the rows and columns of said matrix at different rates to sequentially actuate said light-emitting elements with current from said battery; said switching means sequentially addressing each row and column in said matrix, all of said rows being sequentially addressed while each individual column is addressed, said switching means comprising:
oscillator means for generating a clock signal;
means responsive to said clock signal for generating a plurality of output signals having a fixed frequency relationship to said clock signal and to each other;
binary row selector means, responsive to a first pair of said output signals having the highest frequencies, for sequentially addressing each row in said matrix in step-through fashion in response to the frequency relationship between said first pair of output signals;
binary column selector means, responsive to a second pair of said output signals, for sequentially addressing each



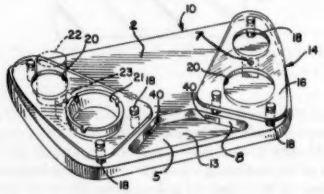
column in said matrix in step-through fashion in response to the frequency relationship between said second pair of output signals;
means responsive to said clock signal for generating a sequence-reversing signal after a predetermined number of cycles of said clock signal; and
means responsive to said sequence-reversing signal for reversing the order in which said row selector means and said column selector means address said rows and columns of said matrix; and
(e) means for electronically connecting said battery to said switching means in response to the unfolding of said temple pieces about said hinges when said frames are worn by a person.

4,254,452

LIGHTED TRAY APPARATUS

Gary P. Switala, 3890 Pondview Dr., Hanover Park, Ill. 60103

Filed Dec. 28, 1978, Ser. No. 973,868
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—154 **10 Claims**



1. An improvement for a lighted tray for storing a plurality of items for use in vehicles having an electrical power source and comprising:
a tray member lying in a first plane and having a bottom side and a top side;
rack means lying in a second plane and comprising at least one frame having at least one opening for receiving at least one item;
pedestal means for releasably attaching said rack means to said tray member wherein said rack means is located at a

spaced distance from said tray member and said first plane is parallel to said second plane;

means for releasably mounting said pedestal means to said top side of said tray member;

light means positioned substantially adjacent to said pedestal means for illuminating said pedestal means, said rack means and said tray member;

electrical conducting means mounted to said bottom side of said tray for electrically interconnecting said light means to the electrical power source of said vehicle; and,

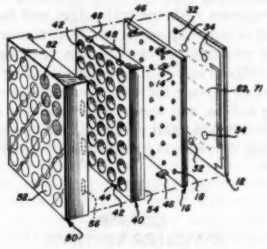
coloring means located between said light means and said pedestal means for selectively coloring the light which is transmitted from said light means to said pedestal means, said rack means, and said tray member.

4,254,453

ALPHA-NUMERIC DISPLAY ARRAY AND METHOD OF MANUFACTURE

Arthur A. Mouyard, Glendale Heights; Michael V. Hamby, Chicago, and Paul A. Tomaszek, Des Plaines, all of Ill., assignors to General Instrument Corporation, Clifton, N.J.

Filed Aug. 25, 1978, Ser. No. 936,728
Int. Cl.³ F21V *1/00*
U.S. Cl. 362—240 **20 Claims**



1. A display array comprising:

a lens array having lens areas arranged in a predetermined array;

a reflector array having integrally formed reflector cavities arranged in said predetermined array in alignment with said lens areas;

an illumination source disposed within each of said reflector cavities, each of said illumination sources including electrical connections for the selective energization of each of said illumination sources; and

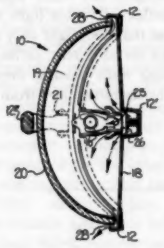
a positioning array comprising an integrally formed array of means for positioning said illumination sources in a predetermined relationship with respect to the corresponding reflector cavity in which said illumination source is disposed, said array of positioning means being arranged in said predetermined array, each of said illumination sources including a body portion and device leads extending from said body portion, each of said illumination source positioning means comprising means cooperating with said device leads of respective illumination sources for providing a predetermined resilient mounting characteristic to said corresponding body portion of each of said illumination sources to achieve said predetermined positioning relationship between said illumination sources and said corresponding reflector cavities.

4,254,454

SELF-VENTILATING DENTAL LIGHTING DEVICE

William C. Hardin, Jr., Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed Dec. 21, 1979, Ser. No. 105,888
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—282 **5 Claims**



1. A self-ventilating, enclosed lighting device for dental, medical or the like uses comprising:

a frame of predetermined enclosed configuration and defining an open front and an open back or said lighting device;

a transparent shield mounted on said frame and generally covering said open front of said lighting device;

a reflector mounted on said frame and generally covering said open back of said lighting device;

an interior chamber within said lighting device and defined by said frame, said shield and said reflector;

a light source mounted within said interior chamber and carried by said frame;

inlet air passage means formed generally at said front of said lighting device and disposed substantially centrally of said transparent shield; and

exit air passage means formed generally at said back of said lighting device;

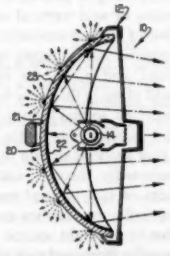
whereby, airflow is created by convection heating of the air by said light source to cause an airflow into said lighting device through said inlet air passage means, through said interior chamber and around said light source, and out of said lighting device through said exit air passage means for cooling said lighting device.

4,254,455

REFLECTOR FOR DENTAL, MEDICAL OR THE LIKE LIGHTING DEVICE

Eugene J. Neal, Jr., Clover, S.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed Dec. 21, 1979, Ser. No. 105,885
Int. Cl.³ F21V *7/02*
U.S. Cl. 362—296 **4 Claims**



1. A reflector for use in a dental, medical or other lighting device wherein light from a light source is reflected thereby in

a predetermined pattern for illumination of a desired zone; said reflector comprising:

a glass substrate of predetermined shape for reflecting light in a predetermined pattern and having a front surface and a rear surface;

dichroic coating means on said front surface of said glass substrate for reflecting a substantial portion of visible light and for allowing infrared and other undesirable energy along with any unreflected visible light to pass through said glass substrate so that cool light only is reflected; and

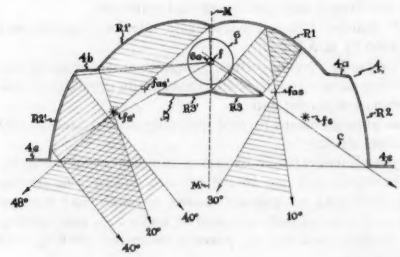
diffuser coating means on said rear surface of said glass substrate for diffusing light passing through said glass substrate to reduce undesirable glare from the rear of said reflector.

4,254,456

LUMINAIRE FOR ASSEMBLY LINE

James L. Grindle, and Marcus P. Hogue, both of Hendersonville, N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 27, 1980, Ser. No. 125,146
Int. Cl.³ F21V 7/09
U.S. Cl. 362—300 **7 Claims**



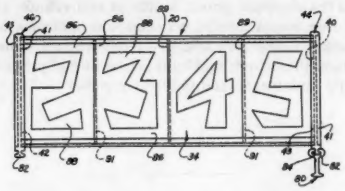
1. A luminaire comprising, in combination, a housing having a front opening, a concave main reflector mounted within said housing facing said front opening, said main reflector comprising a pair of curved rear sections arranged on opposite sides of a vertical median plane intersecting said main reflector and a pair of forward reflector sections extending forwardly from said rear sections and defining a reflector opening, an auxiliary reflector interposed between said main reflector and said reflector opening and comprising a pair of reflector sections arranged on opposite sides of said vertical median plane respectively facing said pair of curved rear sections of said main reflector and having opposite lateral edges spaced from said forward reflector sections, and means for mounting a light source substantially in said plane in the space between said rear and auxiliary reflector sections, so that light rays from the light source incident on said auxiliary reflector are redirected thereby to said curved rear sections of said main reflector for reflection therefrom outwardly through said front housing opening on opposite sides of said vertical median plane, the arrangement of said rear reflector sections and said auxiliary reflector sections relative to the light source being such that light rays reflected forwardly from said rear reflector sections pass substantially entirely through the space between said auxiliary reflector sections and said forward reflector sections without additional reflection.

4,254,457

ILLUMINATED DISPLAY FOR HOUSE NUMBER OR THE LIKE

Edgar T. Lordier, 212 Robinwood Ave., Columbus, Ohio 43213

Filed Apr. 16, 1979, Ser. No. 30,176
Int. Cl.³ F21L 7/00
U.S. Cl. 362—367 **7 Claims**



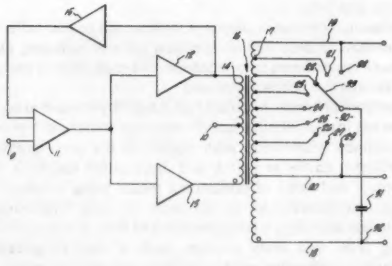
1. An illuminated house number construction comprising (an extruded) a main body means comprising (integral) top, rear, end and bottom wall portions, an (upper shoulder) front edge on said top wall portion, forming an upper face mounting shoulder, (slot) a (lower shoulder) front edge on said bottom wall portion forming a lower face mounting (slot, and right and left wall edges) shoulder; a front face member of light transmitting material including upper and lower face edges mounted (in) on said upper and lower shoulders; (slots, and right and left face edges; and right and left closure caps, each of the caps including a peripherally extending cap mounting should that registers with the wall edges and face edge on a respective end of the body means and face member; and fastening means for retaining the closure caps in mounted relationship with the edges.) said face member including a continuous light transmitting surface for selectively mounting an opaque mask forming indicia, and upper and lower face member slots for selectively receiving and mounting light transmitting indicia blank means in overlying relationship with the front face member.

4,254,458

INVERTER SYSTEMS

Phillip A. Griffith, Goleta, Calif., assignor to Santa Barbara Avionics, Inc., Goleta, Calif.

Filed Jan. 15, 1979, Ser. No. 3,219
Int. Cl.³ H02M 7/00
U.S. Cl. 363—13 **3 Claims**



1. A DC to single phase AC power inverter for an aircraft including input means for receiving a DC voltage, circuit means for inverting the DC voltage to an AC voltage at a frequency of substantially 400 Hertz, such circuit means including an oscillator connected to amplifier means and a feedback circuit between the amplifier output and oscillator input,

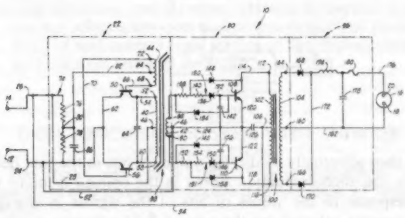
a transformer having primary and secondary windings, the AC voltage being fed from the amplifier means to the the primary winding and the primary winding forming part of the inverting circuit, at least three output leads from the secondary winding forming two outputs and adapted to connect the secondary winding to a load, two of the leads being at the extremities of the secondary winding and the third lead tapping the secondary winding intermediately, and one of the leads forming a common lead, terminals from between the extremities of the secondary winding for tapping different voltages, switch means for connection with different terminals on the secondary winding and a capacitor connected between the switch means and one of the leads from the secondary winding of the transformer, the switch means connecting with a chosen terminal whereby the voltage across the capacitor, the capacitance of the capacitor, and the load impedance substantially match thereby to improve the power factor of the inverter.

4,254,459

DIRECT CURRENT TO DIRECT CURRENT CONVERTER

James M. Belson, Oklahoma City, Okla., assignor to JMJ Electronics Corp., Oklahoma City, Okla.

Filed Jan. 8, 1979, Ser. No. 1,673
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—24 **6 Claims**



1. In a converter for providing direct current at a relatively high voltage to a load connected to first and second output terminals of the converter from direct current supplied at a relatively lower voltage from a source connected to first and second input terminals of the converter of the type including a saturable-core square-wave oscillator connected to the converter input terminals for generating an alternating, square-wave electromotive force in an oscillator secondary winding of a saturable transformer, forming a portion of the oscillator, in response to direct current supplied at the converter input terminals and having rectifier means connected between the converter output terminals and the oscillator secondary winding for providing direct current to a load connected to said output terminals in response to an alternating electromotive force supplied thereto, the improvement wherein the converter further comprises amplifier means, interposed between the oscillator secondary winding and the rectifier means and connected to the converter input terminals, for generating and supplying to the rectifier means an electromotive force having an amplitude greater than a potential difference applied to the converter input terminals in response to the alternating, square-wave electromotive force generated in the oscillator secondary winding wherein the oscillator secondary winding is center-tapped and connected via the center tap thereof to the first input terminal of the converter so as to provide two square-wave oscillator output signals in phase opposition at opposing first and second ends thereof and wherein the amplifier means is characterized as comprising a push-pull power amplifier comprising:

an amplifier transformer having a center-tapped amplifier primary winding connected via the center tap thereof to the second input terminal of the converter and an amplifier secondary winding connected to the rectifier means;

a first switching transistor connected between one end of the amplifier primary winding and the first input terminal of the converter, the collector of the first switching transistor connected to the amplifier primary winding and the emitter thereof connected to the first input terminal of the converter, and the base of the first switching transistor connected to one end of the oscillator secondary winding to receive one of the square-wave oscillator output signals, whereby the first switching transistor alternates between conducting and non-conducting states corresponding to the two states of the square-wave signal supplied to the base thereof; and

a second switching transistor connected between the other end of the amplifier primary winding and the first input terminal of the converter, the collector of the first switching transistor connected to the amplifier primary winding and the emitter thereof connected to the first input terminal of the converter, and the base of the second switching transistor connected to the other end of the oscillator secondary winding to receive the other of the square-wave oscillator output signals, whereby the second switching transistor alternates between conducting and non-conducting states, corresponding to the state of the square-wave signal supplied to the base thereof, in phase opposition with the alternation between conducting and non-conducting states by the first switching transistor; and

wherein the amplifier means further comprises:

a first shaping circuit interposed between the oscillator secondary winding and the base of the first switching transistor, comprising:

a first shaping circuit forward current branch, comprising:

a diode connected in series with the base-emitter junction of the first switching transistor so as to transmit a forward biasing current thereto;

a resistor connected in series with the base-emitter junction of the first switching transistor; and

a capacitor connected in parallel across the base-emitter junction of the first switching transistor; and

a diode connected between the base of the first switching transistor and the oscillator secondary winding so as to transmit electrical current in a direction opposite the direction wherein a current is transmitted by the diode of the first shaping circuit forward current branch; and

a second shaping circuit interposed between the oscillator secondary winding and the base of the second switching transistor, comprising:

a diode connected in series with the base-emitter junction of the second switching transistor so as to transmit a forward biasing current thereto;

a resistor connected in series with the base-emitter junction of the second switching transistor; and

a capacitor connected in parallel across the base-emitter junction of the second switching transistor; and

a diode connected between the base of the second switching transistor and the oscillator secondary winding so as to transmit electrical current in a direction opposite the direction wherein a current is transmitted by the diode of the second shaping circuit forward current branch.

4,254,460

PROGRAMMABLE CONTROLLER

Eugene K. Achter, Gaithersburg; David A. Lohr, Ellicott City, and Michael B. Uffer, Baltimore, all of Md., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 20, 1979, Ser. No. 50,354
Int. Cl.³ G06F *15/46*; G01N *33/16*
U.S. Cl. 364—104 **13 Claims**

1. A programmable controller for controlling the operation of electro-mechanical devices through selected protocols, comprising:

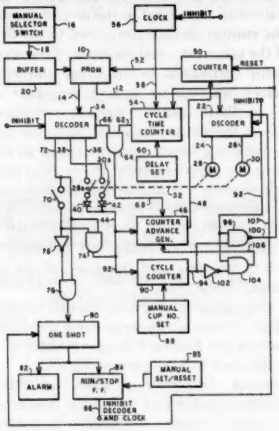
memory means adapted to be programmed with a plurality of instructions for outputting a corresponding plurality of digital output signals, each output signal being selected to actuate at least one of a plurality of electro-mechanical

devices to effect a predetermined function of the actuated device, and each of said output signals being associated with a particular address in the memory means;

means for indexing said memory means to a first address;

means responsive to the completion of the predetermined function of the actuated electro-mechanical device for generating a control signal;

counting means responsive to the control signal for altering a count internal to the counting means and for advancing said memory means to the next successive address therein as the count changes, said counting means being adapted to advance said memory means through each address of a region selected by said indexing means;



whereby the electro-mechanical devices are actuated to effect a selected sequence of functions and the completion of each function causes the counting means to advance the memory means to its next successive instruction for stepping selected electro-mechanical devices through their respective functions; and

selectable timing means, operable with or without the completion-responsive means, for determining the time elapsed during the selected protocol, for stopping the protocol at a selected memory address, and for resuming the protocol after a pre-selected delay.

4,254,461

METHOD AND APPARATUS FOR DETERMINING LINKING ADDRESSES FOR MICROINSTRUCTIONS TO BE EXECUTED IN A CONTROL MEMORY OF A DATA-PROCESSING SYSTEM

Claude N. Chemla, St. Cloud, and Jean M. Bourrez, Versailles, both of France, assignors to Compagnie International l'Informatique-CII Honeywell Bull, Paris, France

Filed Apr. 17, 1978, Ser. No. 897,134

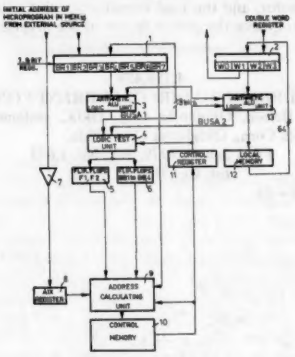
Claims priority, application France, Apr. 19, 1977, 77 11744

Int. Cl.[3] G06F 9/26

U.S. Cl. 364—200 **16 Claims**

1. A method of determining linking addresses of microinstructions contained in a control memory of a microprogrammed data processing system, the system including storage elements for bit values of predetermined signals, the microinstructions occurring in cycles so microinstruction cycle (n+1) follows microinstruction cycle n, each microinstruction cycle including a preparation phase during which microinstructions are prepared, each preparation phase being followed by an execution phase during which a microinstruction at an address supplied to the control memory is executed by the system, the microinstruction of cycle n contained in the control memory having (a) a first bit field indicating a microinstruction linking address to the microinstruction of cycle (n+1) unless modified during cycle n, the microinstruction linking address to the microinstruction of cycle (n+1) being susceptible of being modified during the preparation phase of cycle n in response to the predetermined signals stored in the storage elements, (b) a second bit field selectively designating which storage elements contain the predetermined signals that can control the first bit field, and (c) a third bit field for selectively enabling changes to be made in the storage elements, the system further including an address register for the first bit field; comprising, during cycle n, performing the steps of:

(1) selectively enabling the bit values of signals in predetermined ones of the storage elements to be changed in response to predetermined values of the third field;



(2) then selectively modifying values of bits in the first field of the microinstruction stored in the control memory in response to the values of bits of the signals in storage elements selected by the second field whereby a selectively modified first field is derived;

(3) storing the selectively modified first field in the address register as an address indication for cycle (n+1); and

(4) then supplying the address indicated by the selectively modified first field in the address register to the control memory, whereby during the execution phase of cycle (n+1) the microinstruction at the address supplied to the control memory during cycle n is executed.

4,254,462

HARDWARE/FIRMWARE COMMUNICATION LINE ADAPTER

James C. Raymond, Framingham; Richard A. Lemay, Bolton, both of Mass., and Richard P. Kelly, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jun. 1, 1978, Ser. No. 911,635

Int. Cl.[3] G06F 3/00

U.S. Cl. 364—200 **4 Claims**

1. A hardware/firmware communication control logic system for accommodting the concurrent bidirectional transfer of data messages between a communications processor and different terminal devices via a communication channel which comprises:

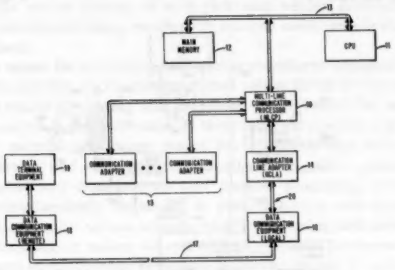
(a) memory means in electrical communication with said communications processor for storing said data messages and status and control information exchanged between said communications processor and said control logic system;

(b) firmware control means in electrical communication with said memory means and responsive to stored control information received from said communicatons processor for supplying microinstruction sequences to control the operation of said control logic system;

(c) microprocessor logic control means in electrical commu-

nication with said firmware control means and said memory means for modifying said microinstruction sequences and serializing and deserializing said data messages;

(d) interface logic means in electrical communication with said microprocessor logic control means and said firmware control means for supplying interrupt service requests and control information to said communications processor, said communications channel, and said control logic system; and



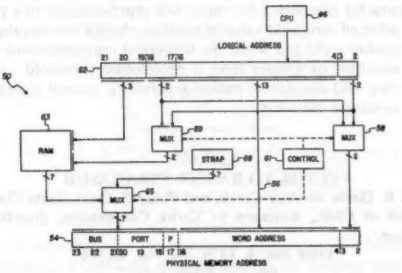
(e) said firmware control means operating in response to said control information from said processor to adapt the functions of said control logic system to the requirements of said different terminal devices.

4,254,463

DATA PROCESSING SYSTEM WITH ADDRESS TRANSLATION

W. Ray Busby, and Von R. Dunn, both of Richardson, Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 14, 1978, Ser. No. 969,639
Int. Cl.[3] G06F *3/00, 9/36*
U.S. Cl. 364—200 **9 Claims**



1. In a data processing system including at least one interconnecting bus, means for generating a sequence of contiguous logical memory addresses for said bus, and a plurality of memory modules, connected at ports on said bus and having physical memory addresses associated therewith, with said modules being connectable so that the physical addresses thereof are not necessarily contiguous, an improved transformation unit comprising:

an input register, having a first field of bits and second field of higher order, module address bits, for receiving any of said logical memory addresses;

an output register having a third field of bits and a fourth field of higher order bits, for providing one of said physical memory addresses;

transforming means, upon selection of non-interleaving operation, for receiving at an input thereof bits of a logical memory address, from the second field of the input register, and generating bits of portion of the a corresponding physical memory address to the fourth field of the output register and means for transferring bits from the first field of the input register to the third field of the output register to form another portion of the corresponding physical memory address;

means, upon selection of interleaving, for directing sequential logical memory addresses to separate memory modules in accordance with interleaving, including means for applying a selected number of bits from the first field of the input register to said input of said transforming means in the place of a part of said module address bits from said second field for generating bits of a portion of the corresponding physical memory address to the fourth field of the output register and

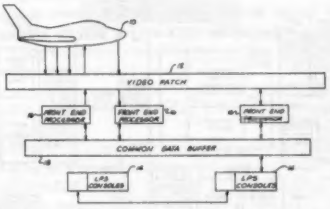
means upon selection of interleaving, transferring selected bits of said first and second field to said third field to form another portion of the corresponding physical memory address.

4,254,464

COMMON DATA BUFFER SYSTEM

Frank Byrne, Cocoa Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,437
Int. Cl.[3] G06F *13/00, 15/16*
U.S. Cl. 364—200 **3 Claims**



1. A system for providing communication between computers and a plurality of memory storage cards according to the address signals supplied with information coming from the computers, said system comprising:

(a) a plurality of register file means each provided for storing information coming from a respective computer;

(b) a backplane bus connected to each of said register file means;

(c) a scanner means for reading out said information stored in said register file means in a predetermined sequence and temporarily storing said information in a respective backplane bus;

(d) a multiplexer connected to each backplane bus for receiving information from a respective backplane bus;

(e) a memory address bus connected to said plurality of memory storage cards;

(f) a memory data bus;

(g) a master scanner means for scanning said multiplexers and sequentially gating said information from said multiplexers to said memory address bus and said memory data bus;

(h) a stack control logic circuit means connected to said memory address bus for checking said information stored in said memory address bus and determining if said information contains any predefined interrupt vectors, said stack control logic circuit means writing said information stored on said memory data bus in said memory cards when no interrupt vectors are present said stack control logic circuit means comprising

(h)(1) an address register connected to said memory address bus for temporarily storing said information coming from said memory address bus;

(h)(2) an error checking circuit means for comparing said information temporarily stored in said address register against an upper and lower error control code; and

(h)(3) a stack pointer card means connected to said error checking circuit means for storing said data information on said memory data bus into said memory cards at the address on said memory address bus when no error is indicated by said error checking circuit.

4,254,465

STRAP-DOWN ATTITUDE AND HEADING REFERENCE SYSTEM

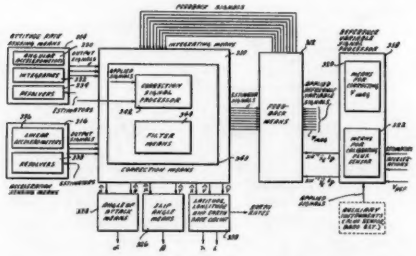
Robert P. Land, Los Angeles, Calif., assignor to Dynamic Sciences International, Inc., Van Nuys, Calif.

Division of Ser. No. 749,928, Dec. 13, 1976, Pat. No. 4,106,094. This application Aug. 3, 1978, Ser. No. 930,672

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

Int. Cl.[2] **G06F** *15/50;* **G06G** *7/78;* **G05D** *1/00*

U.S. Cl. 364—453 **11 Claims**



1. An attitude reference system for use in a moving vehicle to provide signals representing estimates of earth-oriented motion-related variables, and to correct predetermined ones of those estimator signals by comparing them with corresponding applied reference variable signals, said attitude reference system comprising:

attitude rate sensing means for producing output signals which are independent of the heading of the vehicle and represent pitch and roll components of the angular velocity of the vehicle about a set of earth-oriented locally level axes;

acceleration sensing means for producing output acceleration signals representing linear accelerations of the vehicle along earth-oriented axes;

integrating means connected to said attitude rate sensing means and said acceleration sensing means for integrating their output signals to produce estimator signals representing estimates of predetermined earth-oriented motion-related variables; and,

feedback means responsive to the applied reference variable signals and connected to said integrating means for comparing each estimator signal with a corresponding reference variable signal and for generating a feedback signal dependent on their difference and applying the feedback signal to said integrating means to cause the estimator signal to become substantially equal to its corresponding reference variable signal.

4,254,466

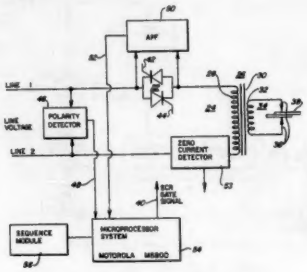
POWER FACTOR MONITORING AND CONTROL SYSTEM FOR RESISTANCE WELDING

Dennis J. Jurek, Grafton, Wis., assignor to Square D Company, Palatine, Ill.

Filed Jan. 29, 1979, Ser. No. 6,990

Int. Cl.[3] **G06F** *15/46;* **B23K** *9/10*

U.S. Cl. 364—477 **5 Claims**



1. A power factor monitoring and control system for controlling the quality of a weld in resistance welding including a welding transformer having primary and secondary circuits, a line voltage applied to the primary circuit and a load circuit in its secondary circuit, the improvement comprising:

means for detecting a polarity change in the line voltage applied to the primary circuit to generate a first logic signal;

means for detecting current extinction in the primary circuit at the end of each half cycle of current conduction in the weld to generate a second logic signal;

means responsive to the first and second logic signals for measuring the time interval between the first and second logic signals of each half cycle;

means for converting the measured time intervals into a numerical representation of the resistive change in the load circuit; and

means for comparing the numerical representation to a preselected threshold value of resistive change representing a quality weld and when the numerical representations are equal to, or greater than, a preselected threshold value then said comparing means generates a control signal to terminate the weld.

4,254,467

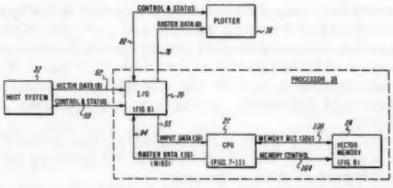
VECTOR TO RASTER PROCESSOR

Jack R. Davis, Boulder Creek, and Philip S. Gold, Santa Clara, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,374

Int. Cl.[3] **G06F** *3/14*

U.S. Cl. 364—521 **11 Claims**



1. In a vector to raster processor for converting vector coordinate information forming a plot into a raster scan line format for presentation to a plotter having a multi-electrode nib array constituting a scan line and addressable between

incremental movements of a record medium in a direction transverse to said array comprising

(a) means for receiving coordinate information of vectors within a current vector band, constituting a predetermined number of scan lines being one of a plurality of bands of equal but of predetermined length making up said plot, the length of said bands being largely dependent on the vector density of said plot, said vector coordinate information being received in random order within each band,

(b) means for initializing said vector coordinate information to provide vector computational values for each vector,

(c) means for storing said initialized vector values for each vector in parallel format in their received random order,

(d) parallel processing means for accessing said storage means and comprising a plurality of parallel operated processor components, said parallel processing means simultaneously dequeuing in parallel format said initialized vector values, simultaneously processing said initialized vector values via one of said processor components and simultaneously requeuing in parallel format the initialized vector values in their previous stored random order into said storage means if the vector requires subsequent processing.

4,254,468

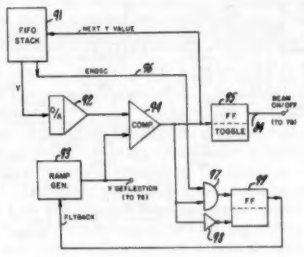
TYPESETTER CHARACTER GENERATING APPARATUS

Roderick I. Craig, Cheltenham, England, assignor to Eltra Corporation, Toledo, Ohio

Division of Ser. No. 905,451, May 12, 1978, Pat. No. 4,199,815. This application May 3, 1979, Ser. No. 35,487

Int. Cl.³ G06F *3/14;* **G08B** *5/36;* **B41B** *19/00*

U.S. Cl. 364—523 **5 Claims**



1. A typesetter for the automatic generation of characters comprising a character imaging system for writing graphics quality characters of any design on a print medium; a font storage system having digital data stored thereon defining each character to be imaged; and an electronic computation and control system, connecting said font storage system with said character imaging system, for controlling said character imaging system in accordance with said digital data;

said character imaging system including a flying spot scanning device for writing characters by means of a plurality of parallel scanning strokes of a scanning beam; and

said computation and control system including:

means for producing a beam deflection signal, determinative of the amount of deflection of said scanning beam in the direction of each stroke, said beam deflection signal causing successive strokes of said beam to start substantially at the intercept point on one side of a character and to terminate substantially at the intercept point on the opposite side of said character.

4,254,469

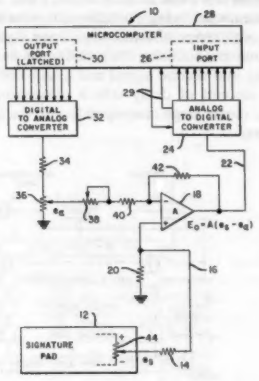
METHOD AND APPARATUS FOR OFFSET ERROR CORRECTION

Robert M. Whitely, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 1, 1979, Ser. No. 16,677

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—571 **22 Claims**



1. Apparatus for compensating for drift from a null point of a measuring device comprising:

comparison means for comparing a first signal from said measuring device with a derived second signal and for providing an output signal representative of the difference between said first and second signals;

analog-to-digital converter means to which said output signal is applied, for providing a digital equivalent of said output signal;

digital-to-analog converter means for providing said second signal to said comparison means; and

data processing means coupled to said analog-to-digital converter means and to said digital-to-analog converter means, and operable in an iterative operation to generate a compensating value which, when applied to said digital-to-analog converter means, results in said second signal having a predetermined relationship to said first signal, said compensating value being generated in a plurality of iterations commencing from a predetermined initial value by incrementing said digital-to-analog converter means to change the magnitude of said second signal until said output signal applied to said analog-to-digital converter means by said comparison means attains a predetermined value.

4,254,470

INTERPOLATING DIGITAL DATA PROCESSING APPARATUS FOR CORRELATION-TYPE FLOW MEASUREMENT

James R. Jordan, Dunfermline, Scotland, assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 22, 1978, Ser. No. 935,794

Claims priority, application United Kingdom, Aug. 22, 1977, 35175/77

Int. Cl.³ G06G *7/30;* **G06F** *7/02*

U.S. Cl. 364—577 **16 Claims**

1. Apparatus for measuring at least one parameter of the flow of a fluid comprising

means for transducing first and second signals from said flow at different positions along said flow;

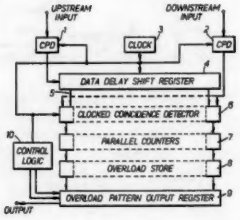
shift register means for receiving said first signal, and being responsive to said first signal for delaying said first signal by a plurality of quantised delay times by means of a

corresponding plurality of stages in said shift register means;

gating means for receiving said second signal and comparing it to said first signal each time the latter is delayed, said gating means being responsive to coincidence between compared signals for producing a coincidence signal each time there is an occurrence of said coincidence;

a set of counters corresponding to the several stages of said shift register means;

said gating means being operative to cause said counters to count occurrence of said coincidence signal with each of said counters counting only occurrences of coincidence between said second signal and a said first signal delayed by an amount of delay which corresponds to the shift register means stage corresponding to the said each of said counters;



each of said counters being responsive to its count to produce an overload signal when said count has reached a given number, whereby the first of said counters to produce an overload signal identifies a quantised value of the actual time it took fluid to flow from one of said positions to the other;

and means for interpolating said quantised value and making it more representative of said actual time, whereby to provide for improved resolution of indication of said flow parameter, the last said means comprising control means for causing comparison of said first signals delayed and said second signal to occur sufficiently often that every said counter overloads and computing means operatively connected to said control means for averaging the quantised delay times represented by said counters, thereby to provide a more representative value of said actual time.

4,254,471

BINARY ADDER CIRCUIT

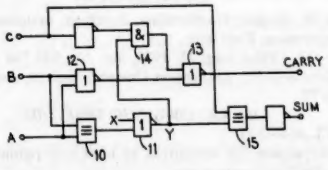
David J. Hunt, Hitchin, England, assignor to International Computers Limited, London, England

Filed Mar. 12, 1979, Ser. No. 19,765

Claims priority, application United Kingdom, Apr. 25, 1978, 16181/78

Int. Cl.³ G06F 7/50

U.S. Cl. 364—784 **2 Claims**



1. A binary adder circuit having three inputs and sum and carry outputs, comprising:

(a) an equivalence circuit connected to the first and second inputs for producing a control signal having a first value when those inputs are equal and a second value when they are not equal;

(b) first circuit means, connected to the third input and responsive to the control signal, for producing a sum signal equal to the third input when the control signal has its first value and equal to the inverse of the third input when the control signal has its second value, the sum signal being applied to the sum output;

(c) second circuit means, connected to the three inputs and responsive to the control signal, for producing a carry signal equal to either of the first and second inputs when the control signal has its first value and equal to the third input when the control signal has its second value, the carry signal being applied to the carry output; and

(d) means operative in response to a mode control signal for forcing the control signal to its first value irrespective of the values of the first and second inputs, thereby making the sum output equal to the third input and the carry output equal to the first or second input.

4,254,472

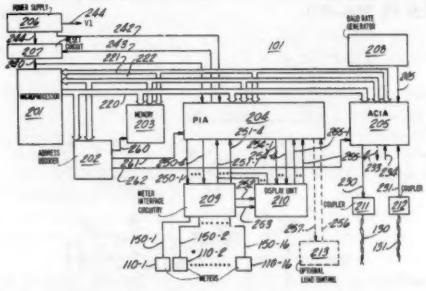
REMOTE METERING SYSTEM

Richard O. Juengel, Romeo, and Kenneth J. Cook, Troy, both of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Aug. 14, 1978, Ser. No. 933,402

Int. Cl.³ H04Q 9/00

U.S. Cl. 364—900 **24 Claims**



1. A remote metering system for use with a plurality of meters, said system comprising:

a local housing containing control means having a plurality of inputs respectively coupled to the outputs of said meters, memory means for storing data, means coupled to said inputs for storing data associated with each meter in predetermined locations in said memory, means for retrieving data associated with predetermined meters from the memory, means for combining said retrieved data prior to transmission so as to provide an output signal as a function of a combination of selected ones of said meters, and interface means for preparing said output signal as one of a plurality of subsequent serial data transmissions; and

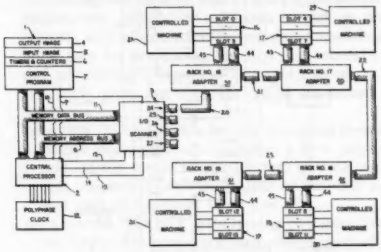
remote data receiving means spaced a distance from the local housing and coupled to the control means via the interface means, operative for receiving said transmissions so that said remote data receiving means receives data which is at least a function of a combination of selected ones of said meters.

4,254,473

RACK ADAPTER FOR SERIALLY CONNECTED I/O INTERFACE RACKS

Daniel J. Galdun, Huntsburg; Raymond A. Grudowski, South Euclid, and Valdis Grants, Lyndhurst, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jan. 29, 1979, Ser. No. 7,554
Int. Cl.³ G06F *15/46, 11/00, 9/06*
U.S. Cl. 364—900 **17 Claims**



1. In a digital controller having a first I/O interface rack with input/output circuits that are adapted to be connected to monitor and control a plurality of I/O devices on a machine, and central processor means which includes means for cyclically coupling multibit I/O data words to and from the input-/output circuits in the first I/O interface rack, first input means and first output means for carrying serial data bits between the cyclical coupling means and the first I/O interface rack, and second input means and second output means for carrying serial data bits between a second I/O interface rack and the cyclical coupling means, the improvement in the controller of a rack adapter which allows the second I/O interface rack to be connected in series with the first I/O interface rack, the rack adapter comprising:

first logic circuit means having a first input coupled to the first input means, having a second control input, and having an output coupled to the second output means for coupling serial data bits between the first input means and the second output means;

enabling means connected to the control input on the first logic circuit means to enable the coupling of serial data therethrough;

second logic circuit means having an output coupled to the first output means, having a first input coupled to the second input means to receive serial data bits from the second I/O interface rack, having a second input which receives data bits coupled from the input/output circuits in the first I/O interface rack, and having a third control input which controls the selection of data for transmission to the central processor means;

bit-receiving means coupled to the first input means for receiving a multibit word of serial data from the central processor means;

bit-transmitting means connected to the second input of the second logic circuit means for transmitting a multibit word of serial data to the central processor means;

next-rack-monitoring means coupled to the second input means to receive a multibit word of serial data transmitted from the second I/O interface rack;

data selector control means connected to the third input of the second logic circuit means to generate a signal thereto for enabling the transmission of a multibit word of serial data from a selected one of the I/O interface racks to the central processor means;

data coupling means operatively connecting both the bi-treceiving means and the bit-transmitting means to input-/output circuits in the first I/O interface rack for coupling multibit words of parallel data therebetween; and

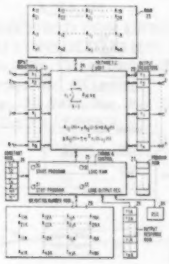
fault detection means coupled to the bit-receiving means, and coupled to the next-rack-monitoring means, for detecting faults associated with the multibit word of data received from the central processor means and with the multibit word of data received from the second I/O interface rack.

4,254,474

INFORMATION PROCESSING SYSTEM USING THRESHOLD PASSIVE MODIFICATION

Leon N. Cooper, and Charles Elbaum, both of Providence, R.I., assignors to Nestor Associates, Stonington, Conn.

Filed Aug. 2, 1979, Ser. No. 63,071
Int. Cl.³ G06F *7/38;* **G05B** *13/02*
U.S. Cl. 364—900 **22 Claims**



1. An information processing system comprising, in combination:

a. a plurality (n) of input terminals **1, 2** . . . j . . . , N adapted to receive N input signals $s_1, s_2 \ldots s_j \ldots s_N$, respectively;

b. a plurality (n) of output terminals **1, 2** . . . , i . . . , n adapted to present n output responses $r_1, r_2 \ldots r_i \ldots r_n$, respectively;

c. a plurality of junction elements, called mnemonders, each mnemonder coupling one of said input terminals (input j) with one of said output terminal (output i) and providing a transfer of information from input j to output i in dependence upon the signal s_j appearing at the input j and upon the mnemonder transfer function A_{ij}; and

d. means for modifying the transfer function A_{ij} of at least one of said mnemonders, when in a learning mode, in dependence upon the product of at least one of said input signals and one of said output responses;

wherein modifications to the transfer functions of the mnemonders, when in a learning mode, take the form:

$$A_{ij}(t) = \gamma A_{ij}(t-1) + \delta A_{ij}(t)$$

where $\delta A_{ij}(t)$ has the form:

$$\delta A_{ij}(t) = \eta(r_i) r s_j$$

where $A_{ij}(t)$ is the new (modified) transfer function, $A_{ij}(t-1)$ is the previous transfer function, γ is a decay constant in the range $0 \leqq \gamma \leqq 1$ and η is a variable learning constant that is dependent upon the output r_i.

4,254,475

MICROPROCESSOR HAVING DUAL FREQUENCY CLOCK

Joseph J. Cooney, Acton, and A. Joel Mannion, Cambridge, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 12, 1979, Ser. No. 19,394
Int. Cl.³ G06F *1/04*
U.S. Cl. 364—900 **3 Claims**

1. A microcomputer adapted to activate a mine in response to detection of a proper object or after a predetermined time

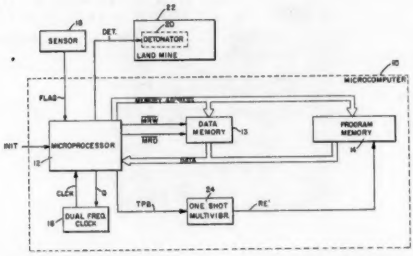
period in the absence of the detection of a proper object during such predetermined time period, comprising:

(a) clock means adapted to produce clock pulses having one of a pair of different frequencies selectively in accordance with a control signal;

(b) sensor means adapted to produce a detection signal in response to a detected object;

(c) a program memory adapted to store a set of instructions representing the predetermined time and criteria for determining whether a detected object is the proper object; and

(d) a microprocessor for executing the set of stored instructions in response to the clock pulses fed thereto by the clock means to determine whether the predetermined time has arrived, and, in response to the detection signal, whether the detected object is a proper object, such microprocessor producing the control signal for the clock means to enable such clock means to produce: (i) clock pulses having a relatively low frequency when the microprocessor is determining whether the predetermined time period has arrived, enabling such microprocessor to execute such instructions at a relatively low rate; or (ii), clock pulses at a relatively high frequency when the microprocessor is determining whether the detected object is a proper object, enabling the microprocessor to execute such instructions at a relatively higher rate.



4,254,476

ASSOCIATIVE PROCESSOR

James L. Burrows, Merrimack, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

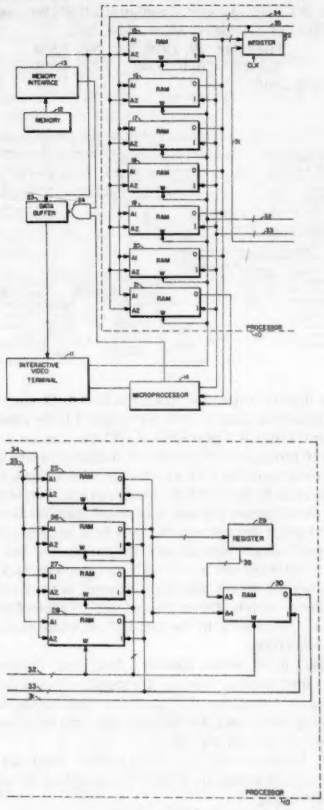
Filed Jun. 25, 1979, Ser. No. 51,468
Int. Cl.[3] G11C *13/00;* **G06F** *11/10*
U.S. Cl. 365—49 **5 Claims**

1. Apparatus for processing binary information comprising

a first memory having a first and a second section each of which are divided into blocks of memory bits in which are stored binary words, said stored binary words are read out of both said sections responsive to memory addressing information made up of binary words previously read out of said first memory section and binary bit codes within said binary information being processed, each of said binary bit codes respresenting a character; binary words are written into said first memory for each character of preselected character sequences being searched for within said binary information, and one binary word for more than one preselected character sequence can be stored in a common memory block,

a first register for storing binary words read out of said first section of said first memory and then applying said stored binary words to addressing inputs of said first memory, and

enabling means responsive to binary words read out of said section section of said first memory for enabling said first register to store a binary word read out of said first section only for the next character of a particular character sequence and not for any other character.

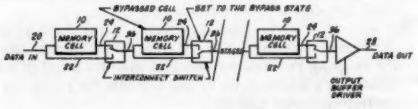


4,254,477

RECONFIGURABLE MEMORY CIRCUIT

Yukun Hsia, Santa Ana, and John A. Wishneusky, San Diego, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 25, 1978, Ser. No. 954,627
Int. Cl.[3] G11C *11/40, 13/00*
U.S. Cl. 365—200 **29 Claims**



22. An adaptive integration apparatus for selective electrical interconnection of a plurality of cells comprising:

a. a plurality of cells each having at least one input line and one output line,

b. a bus connected to each input line, and

c. means for selectively coupling said bus and said output line of at least one cell to at least one input line of another cell, said selectively coupling means comprising:

1. means for storing at least one bit of information as either a high or low state,

2. means for comparing the input and output of said cell with said stored information, said comparing means comprising: a first logic gate for comparing the stored information with the output of said cell and generating a first output in response thereto, a second logic gate for comparing the input to said cell with the stored information and generating a second output in response thereto, and wherein said responsive means is a third logic gate for comparing the first and second outputs and generating a signal in response thereto, wherein said logic gates are "NAND" gates connected as follows:

(a) a first "NAND" gate having two input lines and an output line connected such that a first output from said storing means is input to said gate on one input line concurrent with the output of said cell input to said gate on the other input line,

(b) a second "NAND" gate having two input lines and an output line connected such that a second output from said storing means being the opposite of said first output is input to said gate on one input line concurrent with the input of said cell input to said gate on the other input line, and

(c) a third "NAND" gate having two input lines and an output line connected such that the output line of said first gate is connected to one input line and the output line of said second gate is connected to the other input lines, and

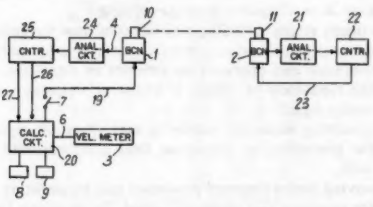
3. means responsive to the result of said comparison for outputting a signal indicative of said result, whereby, a signal on the cell input causes an equivalent signal to appear on said output line of said third gate when said first output is high and whereby a signal on the cell output causes an equivalent signal to appear on said output line of said third gate when said second output is high.

4,254,478

MEASUREMENT OF DISTANCE USING ULTRASONIC SIGNALS

Jean-Claude Dumas, Auriol, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Jun. 22, 1979, Ser. No. 51,298
Claims priority, application France, Jun. 28, 1978, 78 19265
Int. Cl.³ G01S *15/08*
U.S. Cl. 367—2 **10 Claims**



1. A method for measuring the distance between a control beacon and a servo beacon immersed underwater, comprising the ordered steps of:

(a) emitting a first ultrasonic pulse signal from the control beacon,

(b) simultaneously disabling receiver means on said control beacon for a first time period greater than the travel time of said first signal between said control and servo beacons,

(c) receiving said first pulse signal at said servo beacon,

(d) simultaneously disabling receiver means on said servo beacon for a second time period T to prevent the detection of echoes or reflections of said first pulse signal from other objects,

(e) emitting a second ultrasonic pulse signal from said servo beacon at the expiration of said time period T, said second pulse signal having a freqency equal to that of said first pulse signal,

(f) receiving said second pulse signal at said control beacon,

(g) measuring the velocity of an ultrasonic pulse signal in water at said control beacon, and

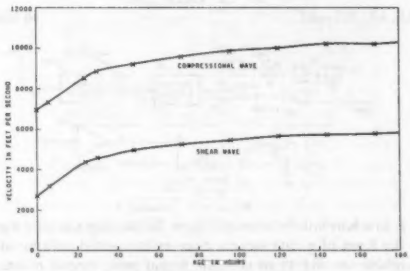
(h) determining the distance between said two beacons as a function of said measured velocity and the propagation time of said first and second pulse signals between the respective beacons.

4,254,479

SONIC LOGGING METHOD FOR DETERMINING THE NEED FOR SAND CONSOLIDATION TREATMENT

Bruce F. Wiley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 22, 1979, Ser. No. 22,901
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—35 **6 Claims**



1. An acoustic well logging method for determining the need for consolidation of a formation surrounding a borehole comprising the steps of:

generating an acoustical wave at a point within said borehole;

receiving at least the compressional waves and shear waves, resulting from said acoustical wave, at a point spaced from the point of generation of said acoustical wave;

measuring the velocity of said compressional wave;

measuring the velocity of said shear wave; and

utilizing a comparison of the compressional wave velocity and the shear wave velocity to determine the need for consolidation of said formation.

4,254,480

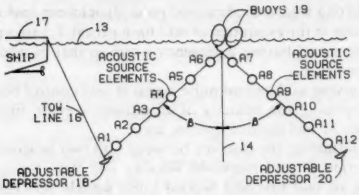
FREQUENCY INDEPENDENT DIRECTIONALLY SENSITIVE ARRAY IN SEISMIC SURVEYING

William S. French, Covington, La., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 941,488
Int. Cl.³ G01V *1/30*
U.S. Cl. 367—58 **8 Claims**

1. In an array of hydrophones located below the surface of the earth, the individual outputs of which are additively connected, said array comprising a first plurality of hydrophones spaced substantially along a first straight line inclined at an angle β to the vertical, and a second plurality of hydrophones spaced along a second straight line similarly inclined, said first and said second straight lines intersecting at or about the surface of the earth and defining substantially a vertical plane, the output sensitivity of each hydrophone in each of said pluralities being substantially inversely proportional to its distance from

the intersection of said array, whereby the response or output of said array to seismic waves of equal amplitude arriving at



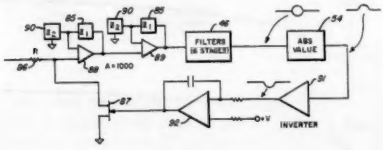
various angles α to the horizontal is substantially the same for all frequencies until $\alpha=\tan^{-1}\cot\beta$and is greatly attenuated for all frequencies at angles larger than this value.

4,254,481

BOREHOLE TELEMETRY SYSTEM AUTOMATIC GAIN CONTROL

Miles A. Smither, and Octavio A. Vela, both of Houston, Tex., assignors to Sperry-Sun, Inc., Sugar Land, Tex.

Filed Aug. 10, 1979, Ser. No. 65,477
Int. Cl.³ G01V *1/40*
U.S. Cl. 367—82 **16 Claims**



1. In a borehole telemetry system for passing acoustic signals in the form of a data stream over an elongated column in the borehole serving as an acoustic signal path, circuit means for affecting gain of a data signal embedded in a high noise level background, which means comprises;

means for increasing the amplitude of the data stream;

means receiving the output of the amplitude increasing means for filtering a high level of noise from the data stream outside a narrow band frequency spectrum of the data stream;

means for controlling the attenuation of the data stream before its passage into said amplitude increasing means; and

means receiving input control signals from said filtering means for controlling the operation of said attenuation controlling means, including means for accumulating input control signals to delay the rate at which said attenuation controlling means is controlled by said means for controlling the operation of said attenuation controlling means.

4,254,482

ECHO LOCATION SYSTEM WHICH PROVIDES FOR MEASURING LIQUID LEVEL AND FLOW RATE AND FLOW VOLUME OF FLOWING LIQUIDS

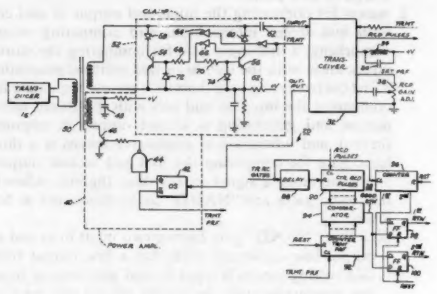
Raymond A. Newman, Cheektowaga, N.Y., assignor to NP Industries, Inc., Buffalo, N.Y.

Division of Ser. No. 818,656, Jul. 25, 1977, Pat. No. 4,145,914. This application Mar. 14, 1979, Ser. No. 20,218
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—87 **6 Claims**

1. For use in echo location systems which provide a measurement in accordance with the period between the transmission and return of signals, a system for discriminating between true and false returns which it comprises

means for transmitting said signals in separate bursts, each burst containing a plurality of said signals during a predetermined period of time,

receiver means for receiving said return signals, and



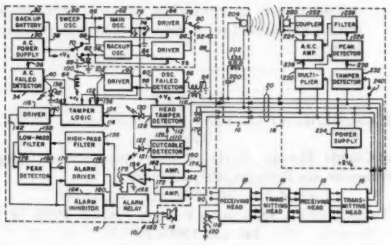
means responsive to the reception of a certain number of said return signals during a period of time commencing with the reception of a burst of said return signals equal to a certain portion of said predetermined period of time for providing an output representing a true return.

4,254,483

ULTRASONIC INTRUSION ALARM SYSTEM

Nikola Vidovic, Santa Clara, Calif., assignor to Atronic Corporation, Santa Clara, Calif.

Filed Jan. 30, 1978, Ser. No. 873,253
Int. Cl.³ G08B *13/16*
U.S. Cl. 367—94 **8 Claims**



1. An ultrasonic intrusion alarm system for detecting a disturbance in an ultrasonic field comprising:

oscillator means including a sweep oscillator for generating a sweep signal and a main oscillator driven by said sweep oscillator and operative to generate an ultrasonic signal, the frequency of which is swept at frequency of said sweep signal;

transmitting means for receiving said ultrasonic signal and for generating an ultrasonic field commensurate therewith;

receiving means disposed proximate said transmitting means for receiving said ultrasonic signal, for receiving Doppler shifted energy reflected by a disturbance in the field and for generating a difference signal at the Doppler frequency of said reflected energy, said receiver means including

transducer means for receiving said Doppler shifted energy and for generating a received signal,

receiver amplifier means for developing an amplifier received signal, said receiver amplifier means including AGC amplifier means for receiving said received signal and a level signal and for developing said amplified

signal, said AGC amplifier having a gain which is controlled by the amplitude of said level signal; and

peak detector means for receiving said amplified signal and for developing said level signal commensurate with the amplitude thereof, said amplified received signal being normally maintained at a substantially constant level, said peak detector means further developing a low received level signal when the amplitude of said amplified received signal is less than a predetermined level,

a multiplier for receiving said amplified received signal and said ultrasonic signal, and for developing the product of said amplified received signal and said ultrasonic signal to generate said difference signal;

field disturbance detector means for receiving said difference signal and for developing an annunciator driving signal when said difference signal exceeds a predetermined level;

tamper detector means for receiving said low received level signal and for developing a tamper detected signal commensurate therewith;

a cable having a first end connected to said field disturbance detector means and a second end and including a pair of wires, said cable for coupling said difference signal to said field disturbance detector means and for coupling said low received level signal to said tamper detector means; and

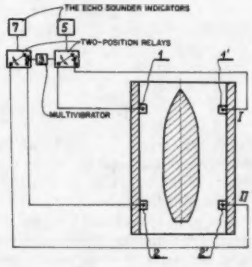
impedance means connected between said pair of wires at said second end, said tamper detector means further causing a current to flow through said pair of wires to develop said tamper detector signal when a potential is developed between said pair of wires which exceeds a predetermined level; and

annunciator means responsive to said annunciator driving signal, said annunciator means also being responsive to said tamper detected signal.

4,254,484
DEVICE FOR THE DETERMINATION OF A SHIP IN DOCK AT THE TIME OF DOCKING

Kazimierz Markowski, Gdansk; Jacek Truszkowski, Sopot; Wojciech Niedzielski, Gdansk-Oliwa, and Jaroslaw Slomkowski, Gdynia, all of Poland, assignors to Przedsiebiorstwo Wdrazania I Upowszechniania Postepu Technicznego I Organizacyjnego Posteor Oddziat W Gdansku, Sopot, Poland

Filed May 31, 1979, Ser. No. 44,011
Claims priority, application Poland, Jun. 6, 1978, 207386
Int. Cl.³ G01S *15/10*
U.S. Cl. 367—115 **1 Claim**

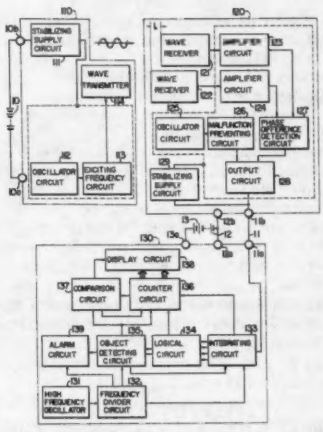


1. Device of determination of a ship in the dock at time of docking, including at least one pair of transmitting-receiving converters of an echo sounder arranged opposite to each other, symmetrically to the longitudinal plane of symmetry of the dock, and an echo sounder indicator, the improvement comprising that each pair of transmitting-receiving converters (1), (1') or (2), (2') of the echo sounder is connected to only one indicator (5), (7) of the echo sounder through a bi-stable switch, preferably a two-position relay (4), (6) controlled by a multivibrator (3), whereas the device preferably includes two pairs of transmitting-receiving converters (1), (1') and (2), (2') of the echo sounder, each of these pairs of converters being connected to a separate indicator (5) and (7) of an echo sounder through the two-position relay (4), (6), both of said two-position relay elements (4) and (6) being connected to only one multivibrator (3).

4,254,485
TEMPERATURE MEASURING APPARATUS WITH ALARM DEVICE

Sigeyuki Akita, Aichi, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 23, 1979, Ser. No. 14,532
Claims priority, application Japan, Apr. 24, 1978, 53-49096
Int. Cl.³ G01K *11/24*
U.S. Cl. 367—117 **4 Claims**



1. An apparatus for measuring a temperature of an ultrasonic sound wave propagation medium comprising:

transmitter means for transmitting an ultrasonic sound wave into an ultrasonic sound wave propagation medium;

first receiver means positioned along a sound propagation path in said propagation medium for receiving said ultrasonic sound wave transmitted from said transmitter means and synchronously producing a first electric signal indicative of a received ultrasonic sound wave;

second receiver means positioned along said sound propagation path in said propagation medium and distanced from said first receiver means for receiving said ultrasonic sound wave transmitted from said transmitter means and synchronously producing a second electric signal indicative of a received ultrasonic sound wave;

detector means for detecting a phase difference between said first and second electric signals produced respectively from said first and second receiver means and producing a pulse signal having a time interval equal to a detected phase difference;

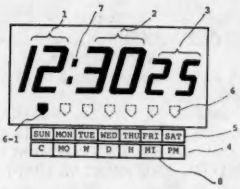
resettable measuring means for measuring said time interval of said pulse signal produced from said detector means and providing an output indicative of a measured time interval; and

indicator means for indicating a presence of an obstacle between said transmitter means and said first and second receiver means in response to an absence of said pulse signal produced from said detector means.

4,254,486
DISPLAY PANEL FOR ELECTRONIC TIMEPIECE

Toshiyuki Masuda, Nara, and Takehiko Sasaki, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 9, 1976, Ser. No. 740,224
Claims priority, application Japan, Nov. 10, 1975, 50-135336
Int. Cl.[3] G04B *19/24*
U.S. Cl. 368—29 6 Claims

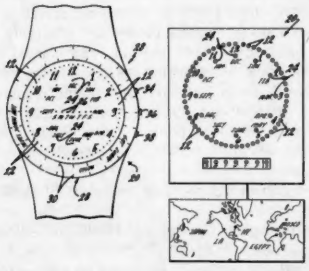


1. A display panel for an electronic timepiece comprising:
a multi-digit numeral display for displaying time information in a digital fashion;
a plurality of aligned symbol designators;
a calendar panel including information as to days of the week provided at positions corresponding to the respective symbol designators;
a mode panel including information as to operation modes of the electronic timepiece other than a normal time of day keeping mode provided at positions corresponding to the respective symbol designators; and
a control circuit for enabling the respective symbol designators in such a manner that the respective symbol designators are continuously enabled when they designate the information provided by the calendar panel, and that the respective symbol designators are controlled to flicker at a given frequency when they designate the information provided by the mode panel.

4,254,487
ELECTRONIC TIME PIECE

Shu-Tso Lee, 1927 Park Dale La., Encinitas, Calif. 92024

Filed Jun. 18, 1979, Ser. No. 49,938
Int. Cl.[3] G04B *19/24;* G04C *17/02, 19/02*
U.S. Cl. 368—29 20 Claims

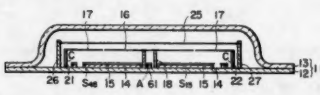


1. An electronic timepiece having a horologic display comprising:
a first plurality of identical single individual display elements arranged in conventional analog clock minute-second sequence;
a second plurality of identical single individual display elements arranged in conventional analog clock hour sequence;
a timing means;
logic means controlled by said timing means connected to said display elements for alternately producing the minute and second indications at conventional analog clock locations each indication producing a steady state appearance on said first plurality of individual display elements and said logic means producing hour indications having a steady state appearance on said second plurality of individual display elements;
first means for selectively cancelling said minute and second indications and displaying the date of the month indication in place thereof at a corresponding numbered minute location; and
second means for selectively cancelling said hour indications and displaying the month number indication in place thereof at a corresponding numbered hour location.

4,254,488
ANALOG ELECTRONIC TIMEPIECE

Shin Ojima, Yao; Kazuhiko Ohgami, Hanazono, and Atsuhi Hisazumi, Yao, all of Japan, assignors to Hoshidenki-Seizo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 908,417, May 22, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 78,271
Claims priority, application Japan, May 25, 1977, 52/68083[U]; Nov. 11, 1977, 52/152181[U]; Jun. 23, 1979, 54/86294[U]; Jul. 5, 1979, 54/93321[U]; Jul. 9, 1979, 54/94301[U]
Int. Cl.[3] G04G *9/04*
U.S. Cl. 368—82 11 Claims



1. An analog electronic timepiece comprising:
an airtight envelope having a front panel and a rear panel, at least said front panel being transparent;
sixty strip-like phosphor display elements formed in the airtight envelope on its said rear panel to radially extend from a central position on said rear panel at equiangular intervals;
an inner grid disposed opposite the strip-like phosphor display elements and substantially concentrically therewith;
an annular outer grid disposed in substantially the same plane as the inner grid on the outside thereof and in opposing relation to the strip-like phosphor display elements;
a thermoelectron emissive heater disposed in opposing relation to the inner and outer grids on the opposite side from the strip-like phosphor display elements;
means for generating a time signal;
a minutes drive circuit supplied with a minute signal included in said time signal;
an o'clock drive circuit supplied with an hours signal included in said time signal;
a decoder and display circuit supplied with the outputs from the minutes drive circuit and the o'clock drive circuit to select the ones of the sixty display elements which correspond to the supplied signals;
a selecting signal generator circuit for generating a selecting signal to render the minutes drive circuit and the o'clock drive circuit operative and to supply the decoder and display circuit with signals corresponding to the operative states of the minutes drive circuit and the o'clock drive circuit, the selecting signal being applied to the minutes drive circuit and the o'clock drive circuit alternatively with each other; and
a circuit for providing a long hand display by applying voltages to both said inner grid and said outer grid at least upon generation of the selecting signal to the minutes drive circuit to illuminate one of the display elements over its entire length in response to the minutes signal, and for

providing a short hand display by inhibiting the application of voltage to said outer grid with the selecting signal to the o'clock drive circuit but permitting the application of voltage to said inner grid alone to illuminate one part of one of the display elements in response to the hours signal.

4,254,489

ELECTRO-OPTICAL TIME-INDICATING SYSTEM

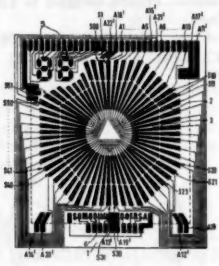
Nadim Azzam, Neufahrn, Fed. Rep. of Germany, assignor to Eurosil GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 27, 1979, Ser. No. 61,178

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834387

Int. Cl.[3] **G04C** *19/00*

U.S. Cl. 368—84 **3 Claims**



1. An electro-optical time indicating system for indicating real time in the fashion of a clock having dial hands, comprising a liquid crystal display unit including:

a plurality of circumferentially spaced radially disposed electrode tracks divided into a plurality of adjacent groups of tracks, each track having a radially inner section and a radially outer section;

a plurality of backing electrodes divided into inner and outer blocks of backing electrodes respectively associated with the inner and outer sections of the electrode tracks, one pair of radially adjacent inner and outer blocks of backing electrodes being associated respectively with one group of electrode tracks, each block of backing electrodes being respectively connected to an input terminal;

a plurality of non-intersecting electrically conductive lines disposed both radially inward and radially outward of said electrode tracks in a meandering fashion for respectively connecting the electrode tracks of adjacent groups in an alternating order of progression, such that the first electrode track of a first group is electrically connected to the last electrode track of an adjacent group and the last electrode track of said first group is electrically connected to the first electrode track in said adjacent group, whereby each electrode track of each group is electrically connected to a corresponding electrode track in every other group, each of said conductive lines being connected at one end thereof to an associated electrode track input terminal;

a counter control circuit having a plurality of up-down counters, each with a number of stages equal to the number of electrode tracks in a group of tracks, for successively actuating said electrode track input terminals in alternating ascending and descending order, and a plurality of unidirectional counters each with a number of stages equal to the number of one of said inner and outer blocks of backing electrodes for successively actuating the input terminals of said blocks of backing electrodes, wherein a unidirectional counter is associated with each of said up-down counters and is responsive to a change between ascending and descending order of actuation by its associated up-down counter to actuate a succeeding backing electrode block operatively connected thereto; and

time multiplexing control means for providing actuating signals to said backing electrode and electrode track input terminals in response to each of said counters such that a simultaneous indication of hours is provided by means of the radially inner sections of said electrode tracks, seconds is provided by means of the radially outer sections of said electrode tracks, and minutes is provided by means of both sections of said electrode tracks.

4,254,490

ELECTRONIC CLOCK HAVING SYNCHRONIZED ANALOG AND DIGITAL DISPLAYS

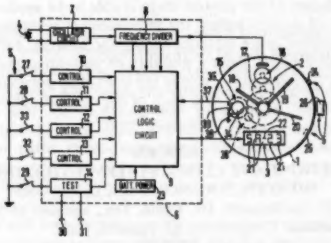
Wolfgang Ganter, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,801

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804013

Int. Cl.[3] **G04B** *19/24, 19/04*

U.S. Cl. 368—29 **6 Claims**



1. In an electronic clock having a cyclically operating pointer driving clockwork mechanism for the analog indication of time in at least hours and minutes, an electronic digital display unit for providing additional real time related date, a display control circuit for controlling the actuation of said digital display unit, means for supplying actuating pulses to said clockwork mechanism, means for supplying actuating pulses to said display control circuit, and manually operable adjusting members for adjusting the information provided by said clockwork mechanism and said digital display, the improvement wherein said actuating pulse supply means comprises a logic element and control means including:

a switching wheel driven by the pointer driving clockwork mechanism,

a contact surface on the circumference of said switching wheel,

a first mating contact connected to one input terminal of said logic element,

a second mating contact connected with a reference voltage source, and

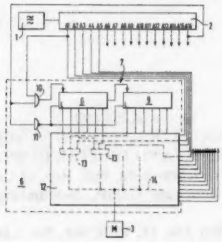
a third mating contact connected with another input terminal of said logic element,

wherein said mating contacts co-act in pairs with said contact surface of said switching wheel to generate two time-staggered pulses which are fed into the logic element to selectively actuate said logic element to thereby supply said actuating pulses to said display control circuit to cause the data displayed on said digital display unit to be changed in a stepwise fashion.

4,254,491
PULSE CONTROL FOR AN ELECTRIC CLOCK

Martin Haub, Steinbach, and Manfred Stein, Eschborn, both of Fed. Rep. of Germany, assignors to Quarz-Zeit AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,399
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749141
Int. Cl.[3] G04C *19/00*
U.S. Cl. 368—85 8 Claims



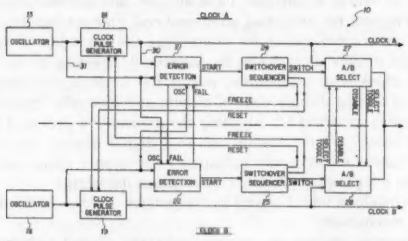
1. In an electric clock with an oscillator, particularly a quartz oscillator, a frequency divider connected to the quartz oscillator and a control stage connected to the frequency divider, a stepping motor coupled with the dial train of the clock and by means of the control stage is able to be applied with a plurality of control pulses, the improvement wherein

said control stage includes means for forming each of the control pulses from a plurality of individual pulses such that the pulse duty cycle of the individual pulses decreases toward the end of said each of the control pulses.

4,254,492
REDUNDANT CLOCK SYSTEM UTILIZING NONSYNCHRONOUS OSCILLATORS

Thomas C. McDermott, III, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 2, 1979, Ser. No. 25,816
Int. Cl.[3] G04F *8/00;* G04B *17/12;* H03B *27/00*
U.S. Cl. 368—119 18 Claims



1. A clock system comprising:

first and second electronic clocks, not synchronized with each other, each including an output signal selectable as the present output of the system;

means for selecting one of said signals;

first means associated with said first clock for detecting errors in the operation of said first clock and of said second clock;

second means associated with said second clock for detecting errors in the operation of said second clock and of said first clock;

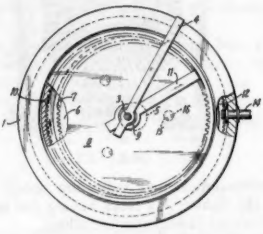
first switchover means, responsive to the detection by said first error detecting means of an error in the operation of the second clock, for switching said selecting means so that the output signal of the first clock becomes the system output, if the output signal of the second clock is said present system output; and

second switchover means, responsive to the detection by said second error detecting means of an error in the operation of the first clock, for switching said selecting means so that the output signal of the second clock becomes the system output, if the output signal of the first clock is said present system output, each of said switchover means including means for switching at a time which ensures that the inverval between pulses in the system output is greater than a predetermined period.

4,254,493
QUICK HOUR SETTING SYSTEM FOR TIMEPIECE

Alain Billet, Besancon, France, assignor to Timex Corporation, Waterbury, Conn.

Filed Dec. 31, 1979, Ser. No. 108,902
Int. Cl.[3] G04C *3/14;* G04B *27/00, 13/00*
U.S. Cl. 368—185 4 Claims



1. In a timepiece having a motor operatively connected to drive a minute hand staff with a minute hand thereon, and also having an hour hand spindle coaxial with said staff and having an hour hand thereon, the improvement comprising:

an epicyclic gear train operatively connected between said staff and

said spindle to drive the spindle at reduced speed,

a setting wheel selectively rotatable about said staff, guiding means operatively connected between portions of the epicyclic gear train and the setting wheel and adapted to enable operation of the gear train, said guiding means being selectively rotatable with the setting wheel to permit setting of the hour hand only.

4,254,494
ACCURACY CORRECTION IN AN ELECTRONIC TIMEPIECE

Hidetoshi Maeda, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

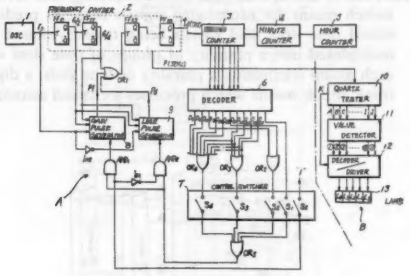
Continuation of Ser. No. 653,952, Jan. 30, 1976, abandoned. This application Mar. 21, 1978, Ser. No. 888,634
Claims priority, application Japan, Jan. 31, 1975, 50-13652
Int. Cl.[3] G04C *9/00*
U.S. Cl. 368—187 15 Claims

1. In a system for correcting the accuracy of an electronic timepiece including a quartz oscillator means for generating a reference signal frequency subject to deviations in magnitude above and below a predetermined frequency, tester means for measuring the deviation of said reference signal frequency from said predetermined frequency, the improvement comprising:

means for classifying said deviation into at least three groups of predetermined ranges of said magnitude;

indicator means including a plurality of indicators forming an ON-OFF display pattern of the classified deviation as a binary number;

reference signal frequency correction means including a plurality of manually operable switches in one-to-one correspondence with said plurality of indicators for generating a correction signal in binary form corresponding to



the binary number displayed by said indicator means by actuating said switches in direct correspondence to the ON-OFF display pattern of said indicators; and

circuit means for coupling said reference signal frequency correction means to said timepiece.

4,254,495

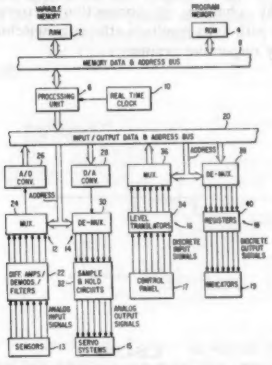
CONTROL SYSTEM INCLUDING BUILT IN TEST EQUIPMENT FOR WIRING HARNESS INTERFACE TESTING

Robert J. Bollard, Wayne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Continuation-in-part of Ser. No. 873,311, Jan. 30, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 52,499

Int. Cl.³ H04M *1/24*

U.S. Cl. 370—14 **8 Claims**



1. A control system of the type responsive to a plurality of signals from external signal sources for providing a control function, comprising:

wiring harness means including a plurality of wires for applying the plurality of signals to the control system;

a controller;

means for providing a tracer signal;

first means connected to the tracer signal means and responsive to the tracer signal therefrom for providing a plurality of signals, and connected to the controller and controlled thereby for applying one of the plurality of signals to a predetermined wire of the plurality of wires in the wiring harness means;

second means connected to the means for providing a plurality of signals for receiving said signals, and connected to the controller and controlled thereby for verifying that the one of the plurality of signals is applied only to the predetermined wire and for providing a verification signal; and

third means connected to the second means for detecting the frequency of the verification signal and for providing a corresponding output signal.

4,254,496

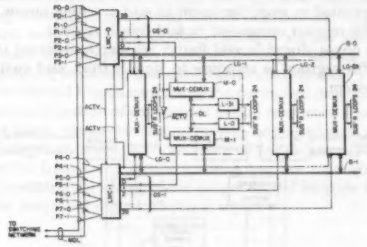
DIGITAL COMMUNICATION BUS SYSTEM

Ernst A. Munter, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 28, 1979, Ser. No. 52,954

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—16 **4 Claims**



4. A digital communication bus system comprising:

first and second multiplexers, each of the multiplexers including means for decoding consecutive time-division multiplexed addresses received over an address signal path, and for receiving and transmitting time-division multiplexed data over respective receive and transmit signal paths in corresponding iterated time slots of a frame;

a plurality of line circuits;

characterized by:

each of said line circuits coupling at least one telephone line to a separate bidirectional data line that is connected in common to the first and second multiplexers;

each of the multiplexers including means responsive to each decoded address for steering data received over the receive signal path to the associated line circuit over its separate bidirectional data line, and for steering data received from the associated line circuit over its separate bidirectional data line to the transmit signal path in the two time slots succeeding its address; and

means responsive to a control signal for actuating one or the other of said first or second multiplexers.

4,254,497

MULTIPORT CONFERENCE CIRCUIT WITH VOICE LEVEL CODING

Tim Funderburk, Villa Park, and Donald W. McLaughlin, Naperville, both of Ill., assignors to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Aug. 6, 1979, Ser. No. 64,202

Int. Cl.³ H04J *3/02;* **H04M** *3/56*

U.S. Cl. 370—62 **4 Claims**

1. In a pulse code modulated (PCM) communication system,

a plurality of communication channels arranged on a multiplexed basis,

a switching system including a memory, a memory access for said communication channels and a conference circuit arrangement including;

a first register connected to said memory operated to store the coded value of information from each of said channels conducted sequentially through said memory,

a voice level coding means connected to said first register responsive to said information to output a code value

representative of the voice level of said information, above an established threshold level,

a second register connected to said first register and including an output means,

a third register connected to receive said code output of said coding means,

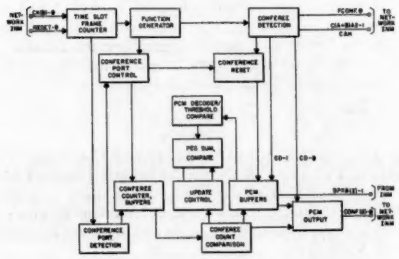
a first comparator circuit connected to said coding means output and to said third register and operated to compare the coded value of information at said coding means output and said third register and in response to a determination that the value of information at said coding means output is less than the value of information stored in said register to provide an output signal,

counting means connected to said memory and periodically incremented in response to signals from said memory,

a fourth register connected to said counting means and operated to store the count of said counting means,

a fifth register connected to said fourth register,

said count stored in said fourth register transferred to said fifth register in response to signals from said switching system,



a second comparator circuit connected to said counting means and said fifth register and operated in response to a determination that the counts in said counting means and said fifth register are equal to provide an output signal,

a sixth register connected to the output of said second register, PCM output gating means having an output to said switching system, said sixth register operated in response to a signal from said switching system for transfer of said coded value of information from said second register to said channels via said sixth register and said PCM output gating means under control of said switching system,

and gating control means connected to said first and second comparator circuits and selectively operated in response thereto to provide an update signal,

said update signal coupled to said third register to operate it to transfer the coded value of information stored in said first register into storage in said third register,

said update signal further being coupled to said fourth register to operate the latter to transfer the count in said counting means into storage in said fourth register.

4,254,498

TIME DIVISION TELEPHONE SWITCHING SYSTEMS

Kanzi Tawara, Sekimachi; Kazuo Hamazato, Itsukaichi; Tatsuro Takahashi, Yokohama, and Tetsuaki Egawa, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Jan. 9, 1979, Ser. No. 2,208

Claims priority, application Japan, Feb. 1, 1978, 53-10665; Feb. 1, 1978, 53-10666; Feb. 1, 1978, 53-10667; Feb. 1, 1978, 53-10668; Oct. 19, 1978, 53-127800

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—63 **27 Claims**

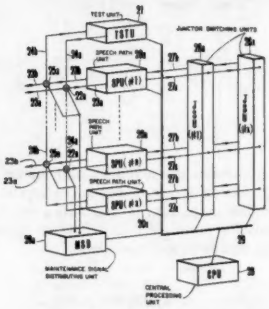
1. A time division telephone switching system in which the time division multiplexed signals are exchanged, said system comprising:

a plurality of speech path units;

a junctor switch unit for interconnecting said plurality of speech path units; and

a central processing unit for effecting an overall control of said speech path units and said junctor switch unit;

each one of said speech path units comprising time division switch means for exchanging signals between predetermined time slots, said signals being time-divisioned and multiplexed into a plurality of groups of time slots with each group comprising a plurality of time slots, a digital trunk circuit means which processes a channel associated



signal containing a register signal identification and a line operating state, and speech path control equipment receiving and distributing control signals, which includes an interface between said time division switch means, said digital trunk circuit and said central processing unit;

said junctor switch unit being constructed to establish connections and reconnections between respective speech path units by treating a plurality of time slots as one group whereby changes in connection between respective speech path units results in effecting switching of the time slots by respective groups.

4,254,499

SIGNAL TRANSMISSION SYSTEM IN A DIGITAL CONTROLLER SYSTEM

Akishige Yoshikane, Choufu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 13, 1979, Ser. No. 48,071

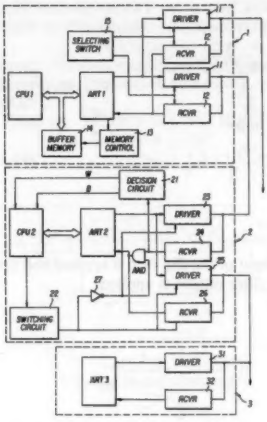
Claims priority, application Japan, Jun. 28, 1978, 53-77386

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—85 **4 Claims**

1. A signal transmission system in a digital controller system comprising a high level control section, a plurality of low level control sections which are monitored and controlled by said high level control section; and a plurality of loop station means connected to each low level control section, said plurality of loop station means transmitting signals directly to a process variable circuit and receiving signals directly from the process variable circuit, in which return and collation are effected for every word in data transmission between said loop station

means and said low level control sections, and return and collation for every word and transfer for every block are



selectively carried out in data transmission between said low level control sections and said high level control section.

4,254,500

SINGLE TRACK DIGITAL RECORDER AND CIRCUIT FOR USE THEREIN HAVING ERROR CORRECTION

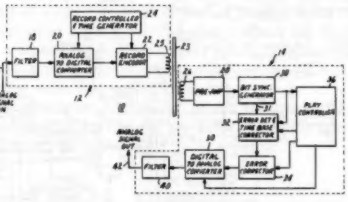
Marshall R. Brookhart, Thousand Oaks, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 847,923, Nov. 2, 1977, Pat. No. 4,145,683. This application Mar. 16, 1979, Ser. No. 21,177

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.[3] **G06F** *11/10*

U.S. Cl. 371—38 **24 Claims**



1. A system for correction of errors in digital data, which data is to be serially recorded on a suitable record medium comprising

(a) means for encoding an input digital signal into a succession of frames, each frame comprising a preselected number of data words and another preselected number of parity words, a cyclical redundancy error check code word corresponding to the frame and a sync word defining the frame location, said encoding means including means for generating the parity words of each frame from the data words in at least two predetermined spatial positions within different preselected frames, each of said different preselected frames being in turn selected to comprise data words spatially located different predetermined intervals of time from the data words of said given frame, said intervals of time being sufficiently long to provide a corresponding sufficient separation of said given frame from said different preselected frames to minimize the possibility that a single defect in a said record medium on which the digitized signal is to be recorded would cause a loss of signals corresponding to both said given frame and said different preselected frames, the parity words generated from the data words of said given frame in combination with the data words of at least one of said different preselected frames being sufficient to enable the reconstruction of corrected data words within a given frame,

(b) means for processing a digital playback signal to determine the presence of erroneous signals within a frame including means for regenerating an error check code word corresponding to a received frame and means for comparing the regenerated error check word with a received error check code word of that frame to provide a frame error signal indicative of said erroneous signals in the absence of a match between the two, and

(c) means responsive to a frame error signal for reconstructing a corrected data word and for inserting the corrected data words in place of the erroneous signals including means for temporarily storing playback signals corresponding to each frame until signals corresponding to the preselected frames containing the parity and data required for construction of data words of said erroneous frame are received, means for reconstructing corrected data words from the received parity and data words within said preselected frames and means for inserting the reconstructed corrected data words in the proper spatial location within the processed digital playback signal.

4,254,501

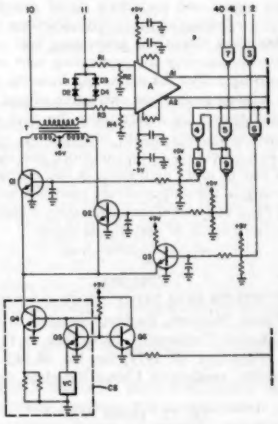
HIGH IMPEDANCE, MANCHESTER (3 STATE) TO TTL (2 WIRE, 2 STATE) TRANSCEIVER FOR TAPPED BUS TRANSMISSION SYSTEMS

Ernest S. Griffith, St. Louis Park, and William W. Davis, Dakota County, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,802

Int. Cl.[3] **H04L** *27/18*

U.S. Cl. 375—9 **10 Claims**



1. A transceiver selectively operable in either a receive or a transmit mode, comprising:

tap means for passively coupling a phase modulated signal from a transmission line during said receive mode and to said transmission line during said transmit mode;

receiver means coupled to said tap means for transmitting a receiver control signal and a receiver data signal to a user during said receive mode, comprising:

first means for producing a receiver control signal when a received phase modulated signal exceeds a threshold envelope,

second means coupled to said first means for detecting the direction of phase changes of said received phase modulated signal and producing said receiver data signal,

third means coupled to said first and second means for transmitting said receiver control signal and said receiver data signal to said user,

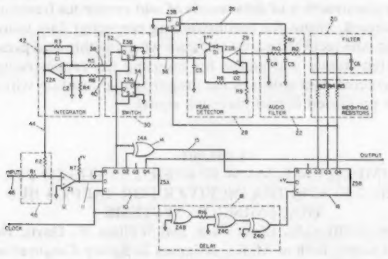
transmitter means coupled to said tap means and responsive to transmitter control and transmitter data signals from said user for producing a first phase and a second phase of a transmitter phase modulated signal during said transmit mode.

4,254,502

DIGITAL ENCODING CIRCUITRY

Richard E. DeFreitas, Westford, and John J. Blake, Pepperell, both of Mass., assignors to DeltaLab Research, Inc., Chelmsford, Mass.

Filed Aug. 30, 1979, Ser. No. 71,244
Int. Cl.³ H03K *13/22*; H04L *27/02*
U.S. Cl. 375—30 **26 Claims**



1. In an electrical system of the type in which a digitally-encoded signal with high and low states is determined at least in part by the difference between a present value of an input signal and a reconstructed signal representative of a past value of said input signal and including signal generating means responsive to a reference signal determined from the output of said peak detection means for generating said reconstructed signal, improved circuitry for generating said reconstructed signal, comprising a filter for extracting from the digital signal information relating to the time derivative of said input signal, peak detection means for determining the peak value of the output of said filter, and means upstream of said filter for responding to a repetition of two or more low states and to a repetition of two or more high states in said digital signal, said filter responding to the output of said upstream means, thereby making said filter and said signal generating means sensitive to repetition of both states of said digital signal.

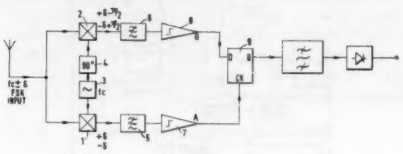
4,254,503

RADIO RECEIVER FOR TONE MODULATED SIGNALS

Ian A. W. Vance, Newport, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,542
Claims priority, application United Kingdom, Oct. 24, 1978, 41679/78
Int. Cl.³ H04B *1/16*
U.S. Cl. 375—91 **6 Claims**

1. A radio receiver for frequency modulated tones comprising a local oscillator running at the carrier frequency, first and second signal paths to which the received radio signal are applied, each path including means for mixing the local oscillator output with the received signals followed by a low pass filter and a limiting amplifier stage, means for introducing a 90° phase shift between the local oscillator output and the received radio signals in one of said paths only prior to the mixing of the oscillator output and the received signals, a flip-flop having a clock input and a signal input, means applying the output of one of the limiting amplifier stages to the signal input of the flip-flop and for applying the output of the other limiting amplifier stage to the clock input of the flip-flop, filter means to



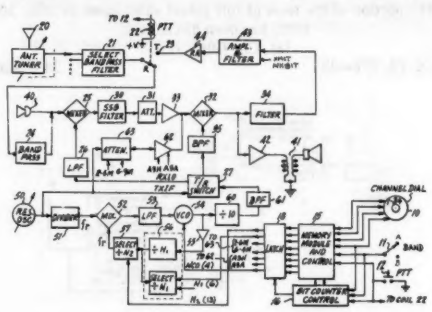
which the output of the flip-flop is applied and detector means to which the filter output is applied.

4,254,504

CONTROL APPARATUS FOR A TRANSCEIVER EMPLOYING A PROGRAMMABLE MEMORY

James P. Lewis, Raleigh, and James C. Carroll, Apex, both of N.C., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 8, 1978, Ser. No. 932,066
Int. Cl.³ H04B *1/40*
U.S. Cl. 455—76 **18 Claims**



16. A method of controlling the operation of a transceiver, comprising the steps of:

storing in a memory a plurality of bits at each of a given number of storage locations, with a first portion of said bits indicative of one frequency of a plurality of frequencies in a band of operation and a second portion of said bits indicative of an operating power level,

selecting one of said locations,

retrieving and storing said first portion of said bits during a first operation,

retrieving and storing said second portion of said bits during a second operation,

applying said first portion of said bits to a controllable frequency source to cause said source to provide said frequency according to said first bit content, and

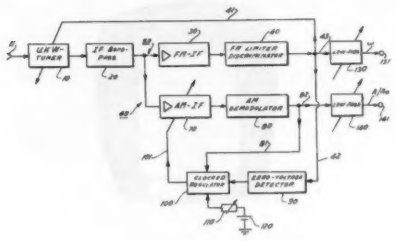
applying said second portion of said bits to a power level control device to cause said power level control device to provide an output according to said second bit content.

4,254,505

NORMALIZATION METHOD AND APPARATUS USED WHEN QUANTITATIVELY MEASURING THE RECEPTION QUALITY OF A RECEIVED FREQUENCY-MODULATED ULTRASHORT-WAVE SIGNAL

Theodor T. Bossert, Munich, Fed. Rep. of Germany, assignor to Richard Hirschmann, Radiotechnischeswerk, Esslingen am Neckar, Del.X

Filed Apr. 10, 1979, Ser. No. 28,810
Int. Cl.[3] H04B *17/00*
U.S. Cl. 455—146 **10 Claims**



3. An electronic circuit for use in quantification of reception quality of a convention AM-distorted FM transmission which has time-varying amplitude and instantaneous frequency deviation characteristics, comprising: an amplitude monitor responsive to the FM transmission and operating in a manner that the amplitude monitor produces an amplitude signal proportional to the amplitude of the transmission;

a frequency-deviation monitor responsive to the FM transmission and operating in a manner that the frequency-deviation monitor produces a frequency-deviation signal proportional to the instantaneous frequency deviation of the FM transmission;

a normalizer responsive to the amplitude signal and the frequency-deviation signal and controlling the amplitude monitor in a manner that a normalized signal is produced at an output thereof, said normalized signal being proportional to a fraction in which actual amplitude of the FM transmission is the numerator and in which the denominator is an amplitude which a like second FM transmission would have had in the event that said second FM transmission were AM-undistorted; and

a signal processor responsive to the frequency deviation signal and the normalized signal for providing quality-of-reception information.

4,254,506

CHANNEL IDENTIFICATION APPARATUS USEFUL IN A MULTIBAND SWEEP TYPE TUNING SYSTEM

John G. N. Henderson, Princeton, and Robert J. Maturo, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 30, 1979, Ser. No. 43,765
Int. Cl.[2] H04B *1/16, 1/32;* **H04N** *5/50*
U.S. Cl. 455—158 **8 Claims**

1. Apparatus for tuning a television receiver to various channels within separated frequency bands, comprising:

local oscillator means responsive to a tuning voltage for generating a local oscillator signal having frequencies for tuning said receiver to said channels; the frequencies of said local oscillator signal being determined by respective magnitudes of said tuning voltage;

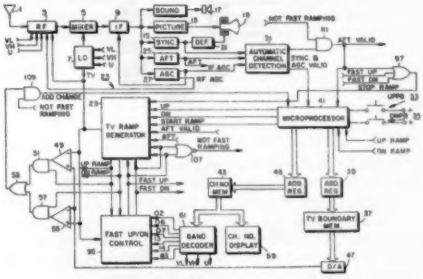
tuning voltage means for generating said tuning voltage; said tuning voltage means including direction means for selectively causing the magnitude of said tuning voltage to be changed in an increasing or decreasing sense;

memory means including a plurality of memory locations associated with each of said bands for storing binary signals representing respective boundary voltages; for each of said bands there being a boundary voltage corresponding to the lower boundary for a tuning voltage range for the lowest frequency channel in said band, a plurality of boundary voltages corresponding to the magnitude of said tuning voltage at frequencies between tuning voltage ranges for respective adjacent channels within the band, and a boundary voltage corresponding to the upper boundary for a tuning voltage range for the highest frequency channel in said band; each of said memory locations having an associated address;

address means for addressing said memory locations;

comparison means for generating an address change signal when the magnitude of a predetermined one of the magnitude of a boundary voltage stored in an addressed one of said memory locations and said tuning voltage exceeds the magnitude of the other one;

control means for causing said address means to address the memory location corresponding to the next consecutive boundary voltage in the order corresponding to the sense of change of the magnitude of said tuning voltage in response to said address change signal as long as the magnitude of said tuning voltage is changing substantially; said control means causing said address means to skip over the addresses of ones of said memory locations associated with the boundary voltages corresponding to the lower boundaries for the tuning voltage ranges for the lowest frequency channels in said bands when the magnitude of said tuning voltage is being increased and for causing said address means to skip over the addresses of ones of memory locations associated with the boundary voltages corresponding to the upper boundaries for the tuning voltage ranges for the highest frequency channels in said bands when the magnitude of the tuning voltage is being decreased;



channel number means for generating binary signals representing channel numbers; said control means causing said channel number means to generate the binary signals representing the channel number next in the order corresponding to the sense of change of the magnitude of said tuning voltage in response to said address change signals as long as the magnitude of said tuning voltage is changing; and

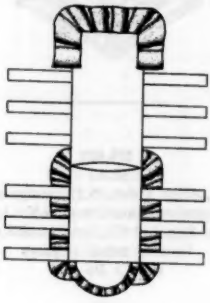
display means for displaying channel numbers in response to the binary signal generated by said channel number means.

258,395
WIG RAIN CAP
Maxine Lee, 614 Byland Dr., Beech Grove, Ind. 46107
Filed Jun. 1, 1979, Ser. No. 44,601
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—235

258,396
FOREPART SHOE SOLE
Newton C. Turner, Jr., Nashville, Tenn., assignor to Genesco, Inc.
Filed Jul. 3, 1978, Ser. No. 921,349
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319

258,397
CHILD'S COMBINED BARBERCHAIR AND ADJUSTABLE CHEEKREST
Salvador V. Perez, 2030 Franklin Canyon Rd., Martinez, Calif. 94553
Filed Feb. 21, 1978, Ser. No. 879,072
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—9

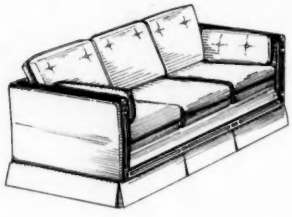
258,398
PORTABLE INFANT BED
Eugenia Kowalska, and George Kowalski, both of 2500 N. Mozart, Chicago, Ill. 60647
Filed Feb. 27, 1978, Ser. No. 881,740
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14



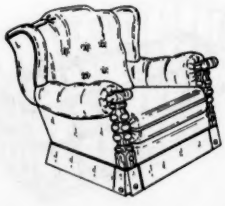
258,399
BASSINET
Theodore F. Schmidt, 1223 N. Main St., Wheaton, Ill. 60187
Filed Jul. 10, 1978, Ser. No. 923,032
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

258,400
ARM CHAIR
Robert K. Thorpe, Newport Beach, Calif., assignor to The Charlton Company, Compton, Calif.
Filed Dec. 12, 1977, Ser. No. 859,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

258,401
SEAT
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Amsterdam, N.Y.
Filed Dec. 8, 1977, Ser. No. 858,485
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

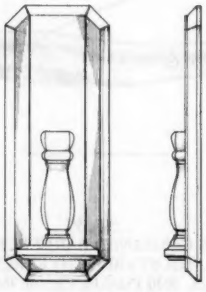


258,402
SEAT
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, Morristown, Tenn.
Filed Dec. 26, 1978, Ser. No. 973,374
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

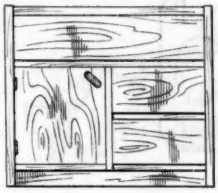


258,403
TOILET ROLL HOLDER
Lars Andersson, Halmstad, Sweden, assignor to Hafa Fabriks AB, Halmstad, Sweden
Filed Mar. 12, 1979, Ser. No. 19,908
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

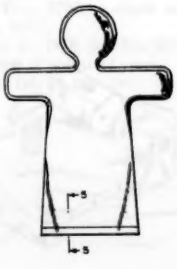
258,404
WALL MOUNTED FLOWER HOLDER UNIT
Philip J. Horin, R.D. 1, Box 179A, Heightstown, N.J. 08520
Filed Sep. 18, 1978, Ser. No. 934,527
Term of patent 14 years
Int. Cl. D6—*06;* D26—*01;* D11—*02*
U.S. Cl. D6—137



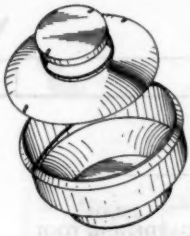
258,405
CHEST
James D. Brown, 1026 Wellington Ct., High Point, N.C. 27262
Filed Sep. 29, 1978, Ser. No. 948,010
Term of patent 3½ years
Int. Cl. D06—*04*
U.S. Cl. D6—164



258,406
COMBINED PILLOW AND PILLOW CASE
Bernard M. Elbaum, 27 Crestview Dr., Pittsford, N.Y. 14534, and Richard L. Huggins, 7180 W. Main St., Lima, N.Y. 14485
Filed Nov. 6, 1978, Ser. No. 958,025
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—202



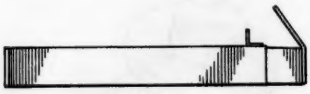
258,407
FOOD COOLING DEVICE
Perrin R. Newman, Box 117, Winona, Mo. 65588
Filed Mar. 14, 1978, Ser. No. 886,565
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—17



258,408
CAN HOLDER
William A. Berkan, Jr., P.O. Box 700, Dixon, Calif. 95620
Filed Mar. 15, 1979, Ser. No. 20,627
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—70

258,409
COMPOST RETAINER
Ray A. Nattrass, 61 Clapham Rd., Sefton, New South Wales, Australia (2162)
Filed Jun. 15, 1978, Ser. No. 915,836
Claims priority, application Australia, Dec. 20, 1977, 73619; Apr. 12, 1978, 74456
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

258,410
FIREPLACE COMBUSTION AIR DUCT
Carlos Mayo, Springdale, Ark., assignor to C. Mayo, Inc., Springdale, Ark.
Filed Feb. 27, 1978, Ser. No. 881,890
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207

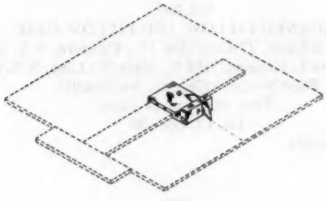


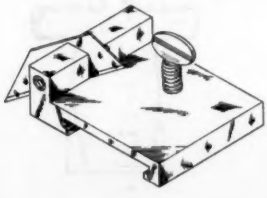
258,411
GARDENING TOOL
Victor K. Futami, 2335 Vancouver Ave., Los Angeles, Calif. 91754
Filed Jul. 26, 1978, Ser. No. 928,196
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—04

258,412
RADIATOR CAP REMOVER
Frank D. Molnar, 6805 Coventry Dr., Citrus Heights, Calif. 95610, and Claude Elliott, Jr., 331 Berthoud St., Sacramento, Calif. 95838
Filed Jan. 11, 1979, Ser. No. 2,675
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—21

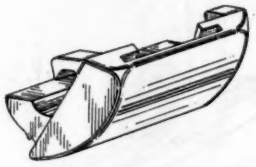
258,413
PROTECTIVE BUMPER SLEEVE FOR SLEDGE HAMMER HANDLES
John H. Adams, 1801 21st Ave., Kingsburg, Calif. 93631
Filed Oct. 2, 1978, Ser. No. 948,018
Term of patent 14 years
Int. Cl. D08—*02*
U.S. Cl. D8—80

258,414
DRY WALL CUTTER
Calvin R. Brott, 1282 S. Lincoln St., Denver, Colo. 80210, assignor to Calvin R. Brott, Denver, Colo.
Filed Nov. 3, 1978, Ser. No. 957,669
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98

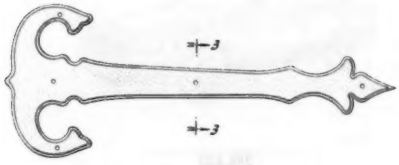




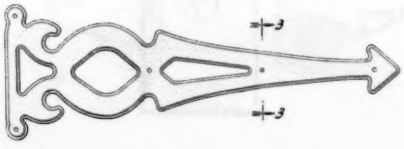
258,415
REMOVABLE HINGE RETAINER FOR VEHICLE SUN ROOFS
George E. DeStepheno, San Dimas, Calif., assignor to Le Van Specialty Co., Inc., City of Industry, Calif.
Filed Mar. 9, 1979, Ser. No. 19,002
Term of patent 14 years
Int. Cl. D8—*06*; D12—*16*
U.S. Cl. D8—323



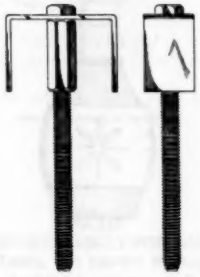
258,416
HINGE STRAP
Jerome E. Kowalski, Troy, Mich., assignor to Leigh Products, Inc., Grand Rapids, Mich.
Filed May 17, 1978, Ser. No. 907,241
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—327



258,417
HINGE STRAP
Jerome E. Kowalski, Troy, Mich., assignor to Leigh Products, Inc., Grand Rapids, Mich.
Filed May 17, 1978, Ser. No. 907,242
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—327



258,418
CONCRETE DECK INSERT
James R. McDonald, Jr., 5117 Worcester Way, Elk Grove, Calif. 95624
Filed Jul. 17, 1978, Ser. No. 925,567
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382



258,419
BOTTLE
Daniel C. Wilson, Taylors, and William J. Britt, Greenville, both of S.C., assignors to Morton-Norwich Products, Inc., Greenville, S.C.
Filed Aug. 31, 1978, Ser. No. 938,557
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

258,420
COMBINED BOTTLE AND STOPPER
James E. Plummer, Toledo, Ohio
Assignor to Owens-Illinois, Inc.
Filed May 1, 1978, Ser. No. 901,662
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—385

258,422
PACKAGING TRAY
Charles D. Mullinix, P.O. Box 105, Waynesville, N.C. 28756
Filed Oct. 19, 1977, Ser. No. 843,643
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416

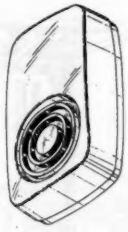
258,421
COMBINED BOTTLE AND CAP
Johannes Polatschek, and Otto Dubsky, both of Vienna, Austria, assignors to Stölzle-Oberglas Aktiengesellschaft, Vienna, Austria
Filed Jul. 19, 1978, Ser. No. 926,107
Claims priority, application Austria, Jun. 1, 1978, 513248/78
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

258,423
PANTYHOSE PACKAGE
Teresita E. Alvarez; David J. Frank, both of New York, N.Y., and Barry G. Carroll, Burlington, N.C., assignors to Burlington Industries, Inc.
Filed Nov. 28, 1977, Ser. No. 855,469
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305

258,424
WALL CHIME

John Doggart, Macclesfield, England, assignor to V. & E. Friedland Limited, Stockport, England

Filed Nov. 20, 1978, Ser. No. 962,317
Claims priority, application United Kingdom, Sep. 15, 1978, 986374/78
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—118



258,425
AUTOMOBILE

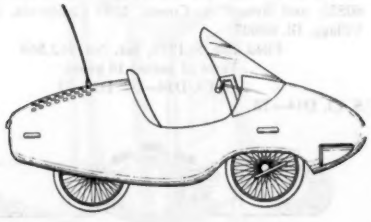
Hans O. Scherenberg; Werner Breitschwerdt, both of Stuttgart; Friedrich H. Van Winsen, Kirchheim, and Bruno Sacco, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Sep. 6, 1977, Ser. No. 830,911
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 4625
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

258,426
MOTORIZED BICYCLE

Jeffrey E. Dunan, 3900 Grandview Blvd., Los Angeles, Calif. 90066

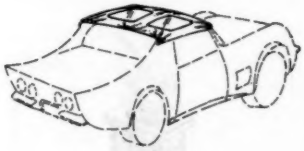
Filed Oct. 2, 1978, Ser. No. 948,770
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



258,427
REMOVABLE AUTOMOBILE CONVERTIBLE TOP

Wadie J. Geraigery, and Richard J. Geraigery, both of 63 Upland Rd., Cambridge, Mass. 02140

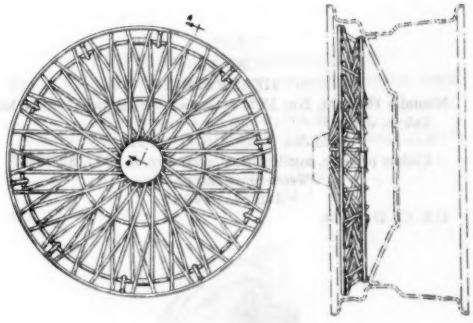
Filed Aug. 3, 1978, Ser. No. 930,750
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



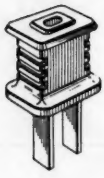
258,428
WIRE SPOKE BASKET FOR WHEELS

Bruce B. Junor, Tustin, and Merlyn R. Reppert, E. Rancho Palos Verdes, both of Calif., assignors to W. R. Grace & Co.

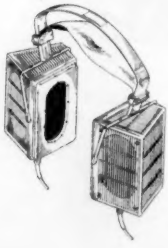
Filed Apr. 4, 1979, Ser. No. 27,193
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



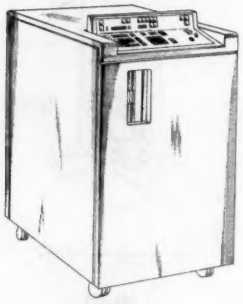
258,429
ELECTRICAL OUTLET PLUG OR SIMILAR ARTICLE
George M. Buckler, Fayetteville, N.Y., assignor to General Electric Company
Filed Apr. 26, 1978, Ser. No. 900,280
Term of patent 14 years
Int. Cl. D 13—*03*
U.S. Cl. D13—28



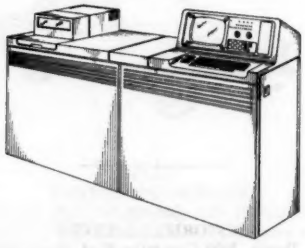
258,430
HEADPHONE
Naotake Hayashi, No. 25-5, 1-chome, Zoshigaya, Toshima-ku, Tokyo, Japan
Filed Jun. 1, 1978, Ser. No. 911,473
Claims priority, application Japan, Dec. 8, 1977, 52-48402
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36



258,431
DATA PROCESSING SYSTEM CONSOLE
John J. Natoli, Woodstock, N.Y., and Robert E. Steinbugler, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 27, 1978, Ser. No. 946,307
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—42

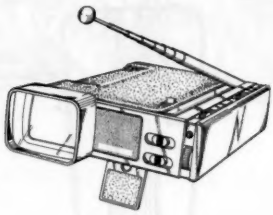


258,432
DATA PROCESSOR
Wayne L. Aderman, Zumbro Falls, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 23, 1978, Ser. No. 953,668
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—43

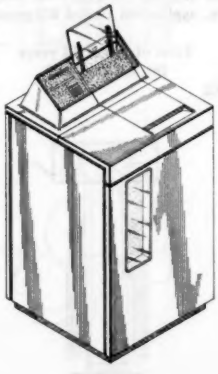


258,433
COMBINED RADIO AND HEADBAND
Robert S. Bulmash, 29 W. 382 White Oak Dr., Warrenville, Ill. 60555, and Robert A. Comm, 1538 California, Elk Grove Village, Ill. 60007
Filed Jun. 5, 1978, Ser. No. 912,569
Term of patent 14 years
Int. Cl. D14—*03*; D2—*03*
U.S. Cl. D14—70

258,434
COMBINED RADIO AND TELEVISION RECEIVER
Kiyoshi Suzuki, Ibaraki; Kenichi Itho, Kawanishi; Tadashi Sumino, Kyoto; Satoru Kotani, Kyoto; Masaki Yamamoto, Kyoto, and Kazunori Mano, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 27, 1979, Ser. No. 52,640
Claims priority, application Japan, Dec. 29, 1978, 53-55965
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—72

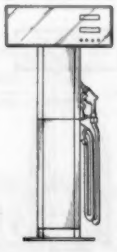


258,435
FACSIMILE MACHINE
Richard A. Branstner, Birmingham; Jay Sucre, Grosse Pointe Farms; Jerry J. Sims, Southfield, and Richard G. Clayton, Detroit, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Jun. 30, 1978, Ser. No. 920,855
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D14—94



258,436
FLUID TRANSFER PUMP
Stephen E. McGilberry, 3113 SW. 52 St., Oklahoma City, Okla. 73119
Filed Sep. 28, 1978, Ser. No. 946,822
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

258,437
LIQUID FUEL DISPENSING PUMP
Roy F. Gray, Wokingham, England, assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sep. 18, 1978, Ser. No. 943,548
Claims priority, application United Kingdom, Mar. 23, 1978, 983885/78
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9.1



258,438

LIQUID FUEL DISPENSING PUMP

Roy F. Gray, Wokingham, England, assignor to Dresser Industries, Inc., Dallas, Tex.

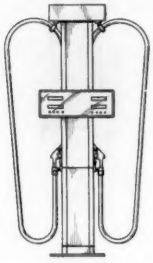
Filed Sep. 18, 1978, Ser. No. 943,545

Claims priority, application United Kingdom, Mar. 23, 1978, 983884/78

Term of patent 14 years

Int. Cl. D15—*02*

U.S. Cl. D15—9.2



258,439

LIQUID FUEL DISPENSING PUMP

Roy F. Gray, Wokingham, England, assignor to Dresser Industries, Inc., Dallas, Tex.

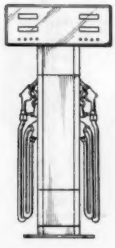
Filed Sep. 18, 1978, Ser. No. 943,546

Claims priority, application United Kingdom, Mar. 23, 1978, 983883/78

Term of patent 14 years

Int. Cl. D15—*02*

U.S. Cl. D15—9.2



258,440

LIQUID FUEL DISPENSING PUMP

Roy F. Gray, Wokingham, England, assignor to Dresser Industries, Inc., Dallas, Tex.

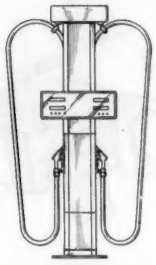
Filed Sep. 18, 1978, Ser. No. 943,547

Claims priority, application United Kingdom, Mar. 23, 1978, 983882/78

Term of patent 14 years

Int. Cl. D15—*02*

U.S. Cl. D15—9.2



258,441

LIQUID FUEL DISPENSING PUMP

Roy F. Gray, Wokingham, England, assignor to Dresser Industries, Inc., Dallas, Tex.

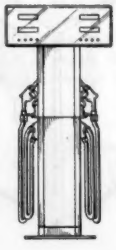
Filed Sep. 18, 1978, Ser. No. 943,550

Claims priority, application United Kingdom, Mar. 23, 1978, 983887/78

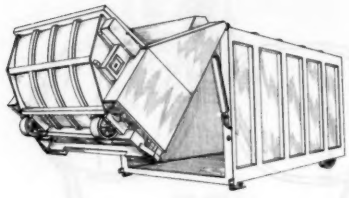
Term of patent 14 years

Int. Cl. D15—*02*

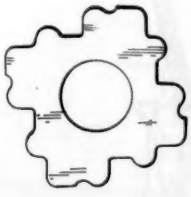
U.S. Cl. D15—9.2



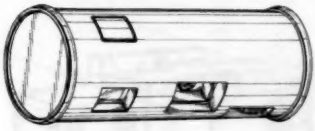
258,442
FRONT DUMP REFUSE COMPACTOR
Lewis W. Schmidt, Rio Vista, Calif., assignor to Blackwelders, Rio Vista, Calif.
Filed Jul. 21, 1978, Ser. No. 926,917
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—123



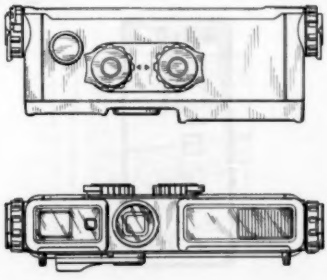
258,443
FORMING TOOL
Warren W. Weible, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio
Filed Nov. 9, 1977, Ser. No. 845,801
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—136



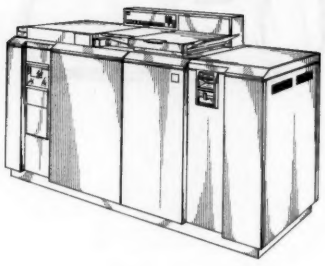
258,444
CAMERA
Hidetaka Mineshima, Tokyo, Japan, assignor to Tizer Company, Ltd., Tokyo, Japan
Filed May 19, 1978, Ser. No. 907,864
Claims priority, application Japan, Feb. 1, 1978, 53-2804
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—01



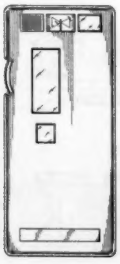
258,445
UNDERWATER CAMERA OR SIMILAR ARTICLE
Tetsuro Ooya, Minami-Kawachi, and Maki Yamashita, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 29, 1979, Ser. No. 7,270
Claims priority, application Japan, Aug. 1, 1978, 53-32626
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—02



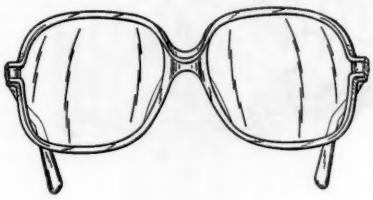
258,446
ELECTROPHOTOGRAPHIC APPARATUS OR SIMILAR DEVICE
Charles A. Beehler, Longmont; Ernest R. Brown, Boulder, both of Colo.; Allen D. Hawthorne, New Canaan, Conn., and Robert M. Hofland, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 27, 1978, Ser. No. 928,677
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



258,447
POCKET-SIZE PHOTOMETER
Franz Singer, Munich, Fed. Rep. of Germany, assignor to Compur-Electronic Gesellschaft mit beschränkter Haftung, Fed. Rep. of Germany
Filed Jan. 19, 1978, Ser. No. 871,155
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—39



258,448
PAIR OF SPECTACLES
Richard W. Canavan, III, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 8, 1979, Ser. No. 18,813
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—65

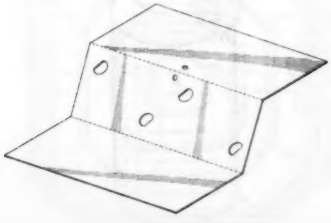


258,449
ELECTRIC GUITAR
Thomas E. Kimble, Covington, Ky., assignor to Baldwin Piano and Organ Company, Cincinnati, Ohio
Filed Apr. 24, 1978, Ser. No. 899,649
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

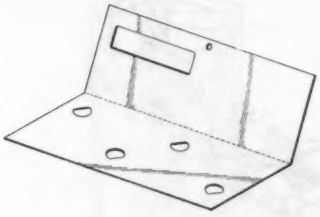
258,450
MUSIC BOX
Chong T. Ahn, 923 Fulton Ave., San Leandro, Calif. 94577
Filed Mar. 13, 1978, Ser. No. 885,787
Term of patent 14 years
Int. Cl. D17—*05*
U.S. Cl. D17—24

258,451
PORTABLE CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed Oct. 13, 1978, Ser. No. 951,236
Claims priority, application Italy, Apr. 14, 1978, 53190 B/78
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7

258,452
DATA CARD SUPPORT AND MAILER MEMBER
Donald W. Hewitt, Roseville, and David D. Seibel, Bloomington, both of Minn., assignors to Data Card Corporation, Minneapolis, Minn.
Filed Jan. 4, 1978, Ser. No. 866,830
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3



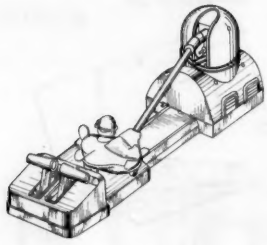
258,453
DATA CARD SUPPORT AND MAILER MEMBER
Donald W. Hewitt, Roseville, and David D. Seibel, Bloomington, both of Minn., assignors to Data Card Corporation, Minneapolis, Minn.
Filed Jan. 4, 1978, Ser. No. 866,833
Term of patent 14 years
Int. Cl. D19—*1*
U.S. Cl. D19—3



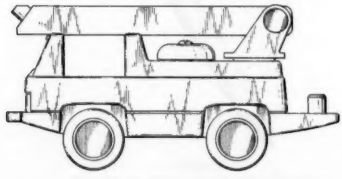
258,454
WRITING INSTRUMENT
Jim Echevarria, 2018 N. 26th, Boise, Id. 83702, and Dennis Wedman, 1422 Biggs St., Boise, Id. 83705
Filed Nov. 20, 1978, Ser. No. 962,315
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—42

258,455
BEVERAGE DISPENSING VENDING MACHINE
Simon Stafford, Stratford on Avon, England, assignor to Mars Limited, London, England
Filed Aug. 10, 1978, Ser. No. 932,754
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4

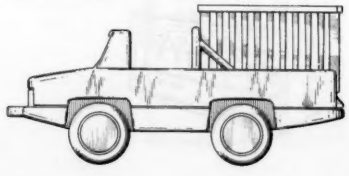
258,456
COMBINED AIRPLANE AND CONTROL PANEL TOY
Toyotsugu Ogasawara, Tateishi, Japan, assignor to Tomy Kogyo Co. Ltd., Tokyo, Japan
Filed May 18, 1978, Ser. No. 907,292
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—90



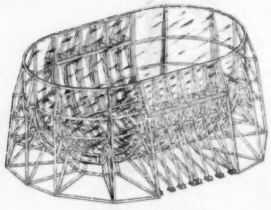
258,457
TOY FIRE TRUCK
John A. Pape, Clifton, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Jan. 24, 1978, Ser. No. 872,353
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—133



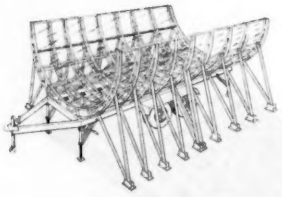
258,458
TOY TRUCK
John A. Pape, Clifton, England, assignor to Hilary Page "Sensible" Toys Limited, Kenley, England
Filed Mar. 22, 1978, Ser. No. 889,129
Claims priority, application United Kingdom, Dec. 28, 1977, 982741/77
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



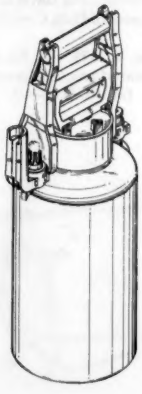
258,459
SKATEBOARD RAMP BOWL
Douglas B. Firestone, 8139 Santa Arminta Ave., San Diego, Calif. 92126
Filed Jun. 8, 1978, Ser. No. 913,838
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



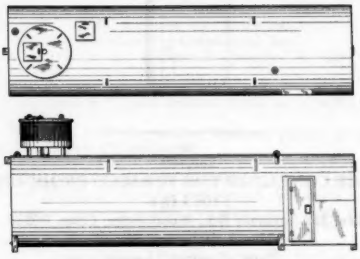
258,460
TRAILABLE SKATEBOARD RAMP
Douglas B. Firestone, 8139 Santa Arminta Ave., San Diego, Calif. 92126
Filed Jun. 8, 1978, Ser. No. 913,837
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



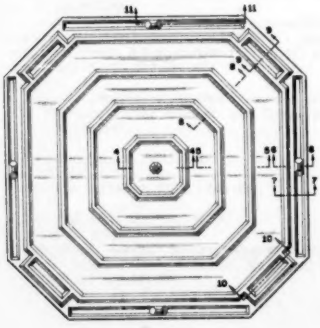
258,461
COMPRESSED AIR SPRAYER TANK
Ho Chow, River Edge, N.J., and David Muramatsu, Long Beach, Calif., assignors to Beatrice Foods Co., Noonachie, N.J.
Filed Oct. 10, 1978, Ser. No. 949,878
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



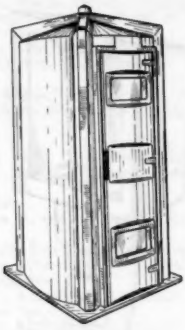
258,462
WATER TREATMENT PLANT OR THE LIKE
James A. Mixon, 5050 Stepp Ave., Jacksonville, Fla. 32216
Filed May 1, 1978, Ser. No. 901,731
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



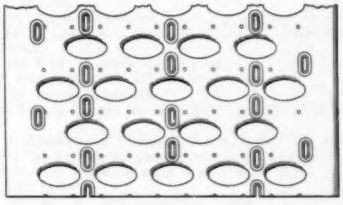
258,463
COMBINED SOLAR HEAT COLLECTOR AND COVER FOR SWIMMING POOLS
David E. Emmer, 255 S. Rengstorff, Apt. #20, Mountain View, Calif. 94040
Filed May 15, 1978, Ser. No. 906,353
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—2



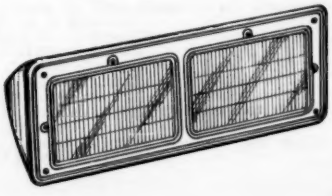
258,464
PORTABLE TOILET
David P. Garst, Lindsay, Canada, assignor to Rosedale Plastics (Containers) Limited, Lindsay, Canada
Filed Oct. 10, 1978, Ser. No. 950,164
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16



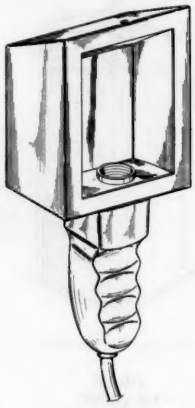
258,465
GRATING
Robert A. Studinski, Big Rock, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.
Filed Mar. 13, 1978, Ser. No. 886,172
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—90



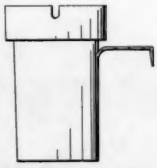
258,466
DUAL HEAD LAMP ASSEMBLY
Bill R. Alsman, 2200 Christmas Tree La., Riverbank, Calif. 95367
Filed Jun. 29, 1979, Ser. No. 53,173
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



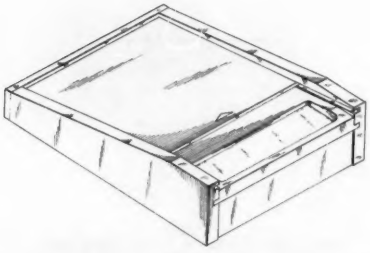
258,467
TROUBLE LIGHT
William W. Buchanan, 914 Magdalene, Houston, Tex. 77024
Filed Jul. 3, 1978, Ser. No. 921,360
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—45



258,468
WATER ASH TRAY
J "E" Kenneth Whitlock, 2504 Linda La., Del City, Okla. 73115
Filed Aug. 15, 1979, Ser. No. 66,856
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—14



258,469
STORAGE CONTAINER FOR TOBACCO PRODUCTS OR THE LIKE
Steven Lee, 151 Seymour Rd., Woodbridge, Conn. 06525
Filed May 3, 1979, Ser. No. 35,623
Term of patent 14 years
Int. Cl. D27—*07*
U.S. Cl. D27—47



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF MARCH, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Walsh, David A.; and Shamblee, Dwight A., 4,254,135, Cl. 424-274.000.
Walsh, David A., 4,254,146, Cl. 424-309.000.

A. Nattermann & Cie. GmbH: *See*—
Dawidson, Herbert; and Betzing, Hans, 4,254,115, Cl. 424-211.000.

A-T-O Inc.: *See*—
Netteland, Loyal G., 4,253,455, Cl. 128-204.260.

A. W. Cash Valve Manufacturing Corporation: *See*—
Lamb, W. Doyle; and Luckenbill, Lawrence F., 4,253,304, Cl. 60-527.000.

AB Svenska Flaktfabriken: *See*—
Larsson, Bertil S. V.; and Bokfors, Stefan A. J., 4,253,314, Cl. 62-332.000.

Abbey, Kirk J., to SCM Corporation. Emulsion process for polymer particles. 4,254,004, Cl. 260-29.60R.

Abbott Laboratories: *See*—
Lee, Cheuk M., 4,254,116, Cl. 424-246.000.

Abe, Kohki; Tsuchiya, Hiroyuki; and Mizuno, Masayoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Dry planographic plate with light sensitive silicone composition. 4,254,209, Cl. 430-272.000.

Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, to Bergwerksverband GmbH. Determination of temperature distributions on awkwardly located or low-access surfaces. 4,254,338, Cl. 250-340.000.

Aberegg, Richard E.; Bell, George H., Jr.; Douglass, Kendal B.; and Reed, Lee R., Jr., to United States Steel Corporation. Car for carrying large vessels. 4,253,790, Cl. 414-420.000.

Abrahamsson, Thore; and Hansson, Kaj. Heat pump arrangement. 4,253,309, Cl. 62-2.000.

Achter, Eugene K.; Lohr, David A.; and Uffer, Michael B., to Baxter Travenol Laboratories, Inc. Programmable controller. 4,254,460, Cl. 364-104.000.

Acitelli, Mario A.; and Woods, James T., to International Business Machines Corporation. Process for preparing epoxy laminates for additive plating. 4,254,186, Cl. 428-462.000.

Acosta, Adam. Remote retriever with interchangeable head. 4,253,697, Cl. 294-115.000.

Adachi, Tsuneyuki: *See*—
Mizuno, Shioji; and Adachi, Tsuneyuki, 4,254,010, Cl. 260-40.0TN.

Adams, Harold R. Valve stem lubricating plate. 4,253,642, Cl. 251-355.000.

Adams, Paul C., to TAU Systems. Air purifier and ionizer. 4,253,852, Cl. 55-126.000.

Adelberger, William H. Dental device and method for replacing lost tooth structure. 4,253,829, Cl. 433-40.000.

Adolf Illig Maschinenbau GmbH & Co.: *See*—
Kiefer, Gunther; and Karbach, Helmut, 4,253,364, Cl. 83-217.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, 4,254,340, Cl. 250-492.00A.

AGFA-Gevaert, A.G.: *See*—
Bauer, Walter, 4,253,653, Cl. 271-22.000.

AGFA-GEVAERT N.V.: *See*—
Willem, Arnold A.; Broekaert, Johan M.; and De Gueldre, Jean M., 4,254,033, Cl. 250-315.200.

Agrawal, Purushottam D., to Monsanto Company. Forming non-cylindrical articles from preforms of polyalkylene terephthalate. 4,254,079, Cl. 264-537.000.

Agrawal, Purushottam D., to Monsanto Company. Forming substantially rectangular articles from preforms of polyalkylene terephthalate. 4,254,080, Cl. 264-537.000.

Aho, Kenneth A.; and Farrell, Francis M., III, to Minnesota Mining and Manufacturing Company. Fluid container. 4,253,773, Cl. 366-247.000.

Aichinger, Dietmar; and Obrist, Albert, to Albert Obrist AG. Container with screw cap. 4,253,581, Cl. 215-344.000.

Aida Engineering, Ltd.: *See*—
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.

Air Industrie: *See*—
Marchal, Paul, 4,253,246, Cl. 34-121.000.

Air Products and Chemicals, Inc.: *See*—
Hegarty, William P., 4,254,094, Cl. 423-648.00R.

Airco, Inc.: *See*—
Hay, Wayne W., 4,253,453, Cl. 128-200.190.

Aisan Industry Co., Ltd.: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,253,347, Cl. 74-862.000.
Naka, Keisuke, 4,253,859, Cl. 62-6.000.

Aitken, W. Sidney; and Sarno, Russell J. Pipe coupling useful at high fluid pressures. 4,253,686, Cl. 285-249.000.

Aizawa, Tatsuo: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,254,202, Cl. 430-120.000.

Akagi, Takao: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.

Akerman, M. Alfred: *See*—
Mashburn, Douglas N.; and Akerman, M. Alfred, 4,254,332, Cl. 250-211.00R.

Akita, Sigeyuki, to Nippon Soken, Inc. Temperature measuring apparatus with alarm device. 4,254,485, Cl. 367-117.000.

Aktiebolaget Atomenergi: *See*—
Fogelberg, Bengt I., 4,253,914, Cl. 176-87.000.

Aktiebolaget Electrolux: *See*—
Blomberg, Peter E., 4,253,311, Cl. 62-148.000.

Akutsu, Eiichi: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.

Akzo N.V.: *See*—
Buter, Roelof, 4,254,185, Cl. 428-460.000.

Akzona Incorporated: *See*—
Kowallik, Jochen; and Brandner, Alexander, 4,254,018, Cl. 260-45.85R.
Olivie, Jacques, 4,254,031, Cl. 260-243.300.
Schuurs, Antonius H. W. M.; and Leuvering, Johannes H. W., 4,254,223, Cl. 435-296.000.

Albert, Donald F. Snow removal device and method of using it. 4,253,257, Cl. 37-195.000.

Albert Obrist AG: *See*—
Aichinger, Dietmar; and Obrist, Albert, 4,253,581, Cl. 215-344.000.

Albright, John M.; and Goode, Steven G. Hitch facilitating. 4,253,680, Cl. 280-479.00R.

Alcan Research & Development Limited: *See*—
Holdner, Donald N., 4,253,823, Cl. 432-18.000.

Alco Electronic Products, Inc.: *See*—
Kirchoff, Francis D.; and Manning, Ralph M., 4,254,310, Cl. 200-6.00R.

Alexander, A. Gordon; and Coupland, Keith, to Exxon Research & Engineering Co. Lubricating grease composition containing pyrrolidone derivative as grease thickener. 4,253,979, Cl. 252-33.600.

Alexander, John I.: *See*—
Street, Thomas T.; and Alexander, John I., 4,254,414, Cl. 340-627.000.

Alla, Madis A.: *See*—
Lippmaa, Endel T.; Alla, Madis A.; Salumyae, Ants A.; and Tukherm, Tiit A., 4,254,373, Cl. 324-321.000.

Allen-Bradley Company: *See*—
Galdun, Daniel J.; Grudowski, Raymond A.; and Grants, Valdis, 4,254,473, Cl. 364-900.000.

Allen, Herbert, to Hallen Company. Cork extractor. 4,253,351, Cl. 81-3.38A.

Alletrux, Marcel F. L. Horse shoe. 4,253,526, Cl. 168-4.000.

Allied Chemical Corporation: *See*—
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,253,870, Cl. 75-159.000.
Dege, Gerald J.; Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, 4,253,900, Cl. 156-309.300.
Grey, Roger A.; and Pez, Guido P., 4,254,059, Cl. 464-492.000.

Allinson, William L.: *See*—
Ross, Nicholas D.; White, George A.; and Allinson, William L., 4,254,153, Cl. 426-441.000.

Althen, Wayne W., to Sunnen Products Company. Precision honing device. 4,253,279, Cl. 51-1.000.

Aluminum Company of America: *See*—
Willis, Wilburn C., 4,253,459, Cl. 128-272.300.

AM International, Inc.: *See*—
Scholten, Frank L., 4,254,371, Cl. 318-685.000.

Amari, Hiroshi: *See*—
Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, 4,254,208, Cl. 430-215.000.

Ambrosius, Erich: *See—*
Laux, Walter; Zettel, Martin; and Ambrosius, Erich, 4,253,410, Cl. 110-331.000.

American Air Filter Company, Inc.: *See—*
Kline, Richard L., 4,253,955, Cl. 210-172.000.
Paucha, Eugene, 4,253,856, Cl. 55-374.000.

American Brands, Inc.: *See—*
Hibbitts, Charles H.; Price, Byron F.; Cogbill, Everett C.; Kelly, James G.; and Glass, James E., 4,253,474, Cl. 131-140.00P.

American Can Company: *See—*
Schroeder, George O., 4,254,169, Cl. 428-35.000.

American Cast Iron Pipe Company: *See—*
Phelps, Edwin H.; and Snow, William E., 4,254,165, Cl. 427-183.000.

American Chemical & Refining Company, Incorporated: *See—*
Fletcher, Augustus; and Moriarty, William L., 4,253,920, Cl. 204-43.00G.

American Cyanamid Company: *See—*
Birnbaum, Jay E., 4,254,145, Cl. 424-305.000.
Floyd, Middleton B., Jr., 4,254,275, Cl. 560-53.000.
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Hanifin, John W., Jr.; and Ridge, David N., 4,254,047, Cl. 260-455.00R.
Hanifin, John W., Jr.; and Ridge, David N., 4,254,048, Cl. 260-465.00F.
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Kuta, George S., 4,254,043, Cl. 260-347.400.
Pfeiffer, Ronald E.; and Peacher, Stanley E., 4,254,076, Cl. 264-206.000.
Shepherd, Robert G., 4,254,138, Cl. 424-283.000.
Strong, Henry L., 4,254,268, Cl. 549-51.000.
Wissner, Allan, 4,254,036, Cl. 260-340.90P.
Wissner, Allan, 4,254,285, Cl. 568-379.000.

American Hoechst Corporation: *See—*
Seeley, Douglas A.; and Kamhi, Victor M., 4,254,196, Cl. 430-17.000.

American Home Products Corporation: *See—*
Sarantakis, Dimitrios, 4,253,997, Cl. 260-8.000.
Sarantakis, Dimitrios, 4,253,998, Cl. 260-8.000.

American Hospital Supply Corporation: *See—*
Rippe, Delfin F., 4,254,097, Cl. 424-8.000.

American Standard Inc.: *See—*
Olson, Paul E., 4,253,379, Cl. 91-35.000.

Ameron, Inc.: *See—*
Magarian, Gerald M., 4,253,894, Cl. 156-175.000.

Analytical Products, Inc.: *See—*
Smernoff, Ronald B., 4,253,845, Cl. 23-230.00B.

Anchor/Darling Industries, Inc.: *See—*
Calabrese, Richard A., 4,253,551, Cl. 188-134.000.

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Flowers, Ralph G.; Nichols, Frank S.; and Anderson, Robert P., 4,254,071, Cl. 264-102.000.
Flowers, Ralph G.; Sherer, Thomas L.; and Anderson, Robert P., 4,254,231, Cl. 525-58.000.

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Billings, Roger E.; Woolley, Ronald L.; and Anderson, Vaughn R., 4,253,428, Cl. 123-1.00A.

Anderson, Warren F. Belt loop anchoring device for a gun holster. 4,253,592, Cl. 224-198.000.

Ando, Tsuneo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.

Andreoni, Alessandro: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,254,137, Cl. 424-283.000.

Andres, Adolf, to Stahlwerke Rochling-Burbach Gesellschaft mit beschrankter Haftung. Slide gate nozzle for ladles. 4,253,647, Cl. 266-271.000.

Andress, Harry J.: *See—*
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., 4,253,975, Cl. 252-32.70E.

Anic, S.p.A.: *See—*
Iori, Giuseppe; and Romano, Ugo, 4,254,276, Cl. 560-64.000.

Annis, Larry D.: *See—*
Arkans, Edward J.; Annis, Larry D.; and Ellmann, Norbert W., 4,253,449, Cl. 128-24.00R.

Anspach, Roy L.: *See—*
Campbell, James R.; and Anspach, Roy L., 4,254,188, Cl. 428-594.000.

Antiphon AB: *See—*
Johansson, Bengt R., 4,253,543, Cl. 181-286.000.

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Hanakata, Takayoshi; and Anzai, Shiro, 4,253,774, Cl. 400-87.000.

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Takamatsu, Toshio; Haga, Hiroyo; Aoki, Kazuo; and Sato, Takeshi, 4,254,323, Cl. 219-110.000

Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Corrosion resistant ferromagnetic metal powders and method of preparing the same. 4,253,886, Cl. 148-105.000.

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Ross, David A.; and Aperavich, Steven M., 4,253,201, Cl. 3-36.000.

Appleyard, Francis J.; and Bagley, George E., to Armstrong Cork Company. Method of maintaining key between silicone belt and vinyl resin blanket by applying a corona discharge to the belt. 4,253,896, Cl. 156-231.000.

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Cassinelli, Giuseppe; Arcamone, Federico; and di Marco, Aurelio, 4,254,110, Cl. 424-180.000.

Ardoin, Frank L.: *See—*
Jentsch, Donald G.; and Ardoin, Frank L., 4,253,683, Cl. 285-13.000.

Areaux, Larry D.: *See—*
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Arnett, Perry J. Firearm of interconvertible calibers. 4,253,377, Cl. 89-163.000.

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Sullivan, James F.; and Arnold, Loren G., 4,253,528, Cl. 172-386.000.

Arrow Pneumatics, Inc.: *See—*
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Arthur D. Little, Inc.: *See—*
Merrill, Richard E.; and Massucco, Arthur A., 4,254,194, Cl. 430-11.000.

Arthur, Jett C., Jr.: *See—*
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Asahi-Dow Limited: *See—*
Ono, Shohachi; Umeda, Noriaki; Kai, Hisayoshi; and Okada, Kenichi, 4,254,028, Cl. 260-23.00S.
Yasujima, Akitaka; and Ishikawa, Shingo, 4,254,337, Cl. 250-339.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Abe, Kohki; Tsuchiya, Hiroyuki; and Mizuno, Masayoshi, 4,254,209, Cl. 430-272.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Kurei, Hiroshi; and Morisawa, Tahei, 4,253,756, Cl. 354-289.000.
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, 4,253,751, Cl. 354-25.000.

Asai, Yasuhiko: *See—*
Kyo, Kayomon; Asai, Yasuhiko; and Kohyama, Haruo, 4,254,242, Cl. 525-425.000.

Asano, Isao, to Babock-Hitachi Kabushiki Kaisha. Narrow weld-groove welding process and apparatus therefor. 4,254,322, Cl. 219-122.000.

Asano, Mitsuru; Segawa, Yoshihiro; and Kondo, Kenji, to Nippon Soken, Inc. Exhaust gas purifying device for internal combustion engine. 4,253,302, Cl. 60-276.000.

ASEA Aktiebolag: *See—*
Eriksson, Leif; and Liberman, Salomon, 4,254,444, Cl. 361-82.000.

Ashford, David W.; Davies, William B.; and Hartley, Sydney S., to Solartron Electronic Group Limited, The. Weapon training systems. 4,253,249, Cl. 434-22.000.

Aslakson, R. Corbin, to Dow Chemical Company, The. Method of heat sealing employing a hot tack adhesive. 4,253,901, Cl. 156-327.000.

Aslan, Edward E., to Narda Microwave Corporation, The. Implantable temperature probe. 4,253,469, Cl. 128-736.000.

Asmussen, Bodo; and Ulex, Georg A., to Beiersdorf Aktiengesellschaft. Pharmaceutical tablet composition. 4,254,099, Cl. 424-23.000.

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Lecomte, Claude; and Fleury, Daniel, 4,253,780, Cl. 405-202.000.

Atlantic Richfield Company: *See—*
Mooi, John, 4,253,939, Cl. 208-120.000.

Atronic Corporation: *See—*
Vidovic, Nikola, 4,254,483, Cl. 367-94.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Steinwart, Johannes; and Ruf, Max, 4,253,805, Cl. 418-54.000.

Aunio, Vesa I.: *See—*
Fancy, Thomas A.; Aunio, Vesa I.; and Capitao, John W., 4,254,344, Cl. 307-86.000.

Autoflug GmbH: *See—*
Seel, Holger, 4,253,621, Cl. 242-107.40A.

Avco Corporation: *See—*
Libertini, Zoltan L., 4,253,953, Cl. 210-168.000.

Avery International Corporation: *See—*
Takemoto, Shiro G.; and Sasaki, Yukihiko, 4,253,899, Cl. 156-277.000.

Ayerst, McKenna & Harrison Inc.: *See—*
Gauthier, Jean A.; and Jirkovsky, Ivo L., 4,254,118, Cl. 424-246.000.

Gauthier, Jean A.; and Jirkovsky, Ivo L., 4,254,121, Cl. 424-248.550.
Sestanj, Kazimir, 4,254,108, Cl. 424-178.000.
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Azzam, Nadim, to Eurosil GmbH. Electro-optical time-indicating system. 4,254,489, Cl. 368-84.000.

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Rinker, William R.; and Varga, Richard S., 4,253,898, Cl. 156-272.000.

Baader, Helmut, to Elektromanufaktur Zangenstein Hanauer GmbH & Co. Snap switch. 4,254,313, Cl. 200-67.00D.

Baatz, Gunther; Schafer, Walter; Findeisen, Kurt; and Dahm, Manfred, to Bayer Aktiengesellschaft. Pressure-sensitive copying paper sheets. 4,253,682, Cl. 282-27.500.

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Asano, Isao, 4,254,322, Cl. 219-122.000.

Babuka, Robert; Heath, Robert E.; Saxenmeyer, George J., Jr.; and Schultz, Lewis K., to International Business Machines Corporation. Restorable backbond for LSI chips using liquid metal coated dendrites. 4,254,431, Cl. 357-82.000.

Bacehowski, David V.; and Hebron, Terrance J., to Baxter Travenol Laboratories, Inc. Method and apparatus for collecting blood plasma. 4,253,458, Cl. 128-272.000.

Baer, Ted A.: *See—*
Kohn, Gustave K.; and Baer, Ted A., 4,254,264, Cl. 546-291.000.

Baetsle, Leon H. J. M.: *See—*
Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., 4,253,936, Cl. 204-296.000.

Bagley, George E.: *See—*
Appleyard, Francis J.; and Bagley, George E., 4,253,896, Cl. 156-231.000.

Bailey, August V.; and Sumrell, Gene, to United States of America, Agriculture. Protein concentrate from high-protein pearl millet. 4,254,022, Cl. 260-112.00R.

Bailey, Dennis B. Piece for catch and toss game. 4,253,673, Cl. 273-428.000.

Bailey, Ronald L., to Young Dental Manufacturing Company, Inc. Dental handpiece. 4,253,832, Cl. 433-115.000.

Baird, John K.: *See—*
Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,254,249, Cl. 526-303.000.

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Baker, Eugene E.; and Streich, Steven, to Halliburton Company. Inflatable packer element with integral support means. 4,253,676, Cl. 277-34.600.

Baker, William, III, to Smith International, Inc. Variable wear pad for crossflow drag bit. 4,253,533, Cl. 175-329.000.

Baldwin, Maynard M.; Wyant, Robert E.; and Vaaler, Luther E., to Battelle Development Corporation. Electrochemical synthesis of butane-1,4-diol. 4,253,921, Cl. 204-72.000.

Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See—*
Pulker, Hans K.; and Daxinger, Helmut, 4,254,159, Cl. 427-38.000.

Banko, Anton, to Surgical Design Corporation. Surgical method and apparatus for implants for the eye. 4,253,199, Cl. 3-13.000.

Bannigan, Vincent W., Jr., to Crompton & Knowles Corporation. Method for improving the light fastness of nylon dyeings using copper phosphate. 4,253,843, Cl. 8-624.000.

Banning, Jack A.: *See—*
Borenstein, David E.; and Banning, Jack A., 4,253,299, Cl. 57-246.000.

Baranyai, Gyula I.: *See—*
Wormmeester, Johan G.; and Baranyai, Gyula I., 4,253,803, Cl. 417-283.000.

Barbagli, Rino O.: *See—*
Cecchi, Carlo F.; and Barbagli, Rino O., 4,253,639, Cl. 251-44.000.

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Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, 4,254,030, Cl. 260-543.00F.

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Renk, Paul, 4,253,771, Cl. 366-89.000.

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Ramm, Peter J.; and Barnes, Alan C., 4,254,123, Cl. 424-250.000.

Barnett, Ronald R., to General Motors Corporation. Passive seat belt system. 4,253,681, Cl. 280-804.000.

Barr, George R., Jr.: *See—*
Moulton, Joseph R.; and Barr, George R., Jr., 4,253,670, Cl. 273-407.000.

Barrett, Walter J. Photo enlarger remote focusing control. 4,253,762, Cl. 355-55.000.

Barron Industries, Inc.: *See—*
Cornelius, Jack M., 4,253,483, Cl. 137-240.000.

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Pacholski, Jan; Kujawski, Zenon; Janczyk, Ryszard; and Bartczak, Marian, 4,253,297, Cl. 57-5.000.

Bartels, Hermann: *See—*
Schwab, Dittmar; Bartels, Hermann; and Graf, Walter, 4,253,320, Cl. 70-276.000.

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Fischer, Joachim; Brandl, Siegfried; and Bartoszek, Rudolf, 4,253,781, Cl. 405-260.000.

BASF Aktiengesellschaft: *See—*
Straub, Ferdinand; Schenck, Hans-Uwe; Lang, Siegfried; and Brode, Egon, 4,254,239, Cl. 525-123.000.

Bates Container Corporation: *See—*
McDonald, William V., 4,253,903, Cl. 156-389.000.

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Baldwin, Maynard M.; Wyant, Robert E.; and Vaaler, Luther E., 4,253,921, Cl. 204-72.000.

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Raymond, Lawrence P., 4,253,271, Cl. 47-1.400.

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Bauer, Richard G.: *See—*
Friedman, Emil M.; and Bauer, Richard G., 4,254,013, Cl. 260-42.470.

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Friends, Gary D.; and VanBuren, Martin F., 4,254,248, Cl. 526-279.000.

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Achter, Eugene K.; Lohr, David A.; and Uffer, Michael B., 4,254,460, Cl. 364-104.000.
Bacehowski, David V.; and Hebron, Terrance J., 4,253,458, Cl. 128-272.000.
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Baatz, Gunther; Schafer, Walter; Findeisen, Kurt; and Dahm, Manfred, 4,253,682, Cl. 282-27.500.
Bier, Peter, 4,254,011, Cl. 260-40.00R.
Finke, Ulrich; and Moretto, Hans-Heinrich, 4,254,271, Cl. 556-479.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,254,228, Cl. 521-128.000.
Kramer, Erich, 4,254,025, Cl. 260-144.000.
Kramer, Wolfgang; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,254,132, Cl. 424-269.000.
Lobach, Wilfried; Lehmann, Wolfgang; and Muller, Friedhelm, 4,254,255, Cl. 528-312.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,254,113, Cl. 424-200.000.
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,254,176, Cl. 428-220.000.
Schwindt, Jurgen; Grogler, Gerhard; and Uhrhan, Paul, 4,254,229, Cl. 521-163.000.
Wambach, Raimund; Hartung, Sigurd; Reiss, Gerhard; and Puppe, Lothar, 4,254,062, Cl. 570-211.000.

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Lehr, Werner, 4,253,702, Cl. 297-468.000.

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Horvath, Imre; Kwasnitza, Kurt; and Meyer, Gundolf, 4,254,299, Cl. 174-15.00S.

Beckenbach, Karl. Method of burning lump-sized combustible material, and an annular shaft kiln for carrying out this method. 4,254,221, Cl. 432-25.000.

Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., to Betz Laboratories, Inc. Deposit control through the use of oligomeric phosphonic acid derivatives. 4,253,912, Cl. 162-76.000.

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Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased (by Heyer, Adele, Hans P. Heyer, heirs); and by Wanders, Marlene, heir, to Robert Bosch GmbH. Method and apparatus for the continuous production of candies from a strand of confection. 4,253,815, Cl. 425-235.000.

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Weber, Richard M.; and Bedenbender, John W., 4,253,538, Cl. 181-119.000.

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Beh, Bruce; and Beh, Patricia M., 4,254,319, Cl. 219-10.55F.

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Bohn, Hans; and Winckler, Wilhelm, 4,254,021, Cl. 260-112.00B.

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Asmussen, Bodo; and Ulex, Georg A., 4,254,099, Cl. 424-23.000.

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Madaliev, Shavkat; Varlamov, Gennady D.; Bekbulatov, Ildgam A.; and Mamatov, Juldash, 4,254,245, Cl. 525-529.000.

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Cross, Stephen D.; Belk, Wilber C.; Frost, Elmer F., Jr.; and Easter, William M., 4,253,560, Cl. 198-479.000.

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Aberegg, Richard E.; Bell, George H., Jr.; Douglass, Kendal B.; and Reed, Lee R., Jr., 4,253,790, Cl. 414-420.000.

Bell & Howell Company: *See*- -
Flint, John R.; Rabindran, Karavattuveetil G.; and Clevenger, Jerry W., 4,254,364, Cl. 315-311.000.

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Bell Telephone Laboratories, Incorporated: *See*—
Jin, Sungho, 4,253,883, Cl. 148-103.000.
Martin, David W., 4,254,440, Cl. 360-76.000.
Venkatesan, Thirumalai N. C., 4,253,728, Cl. 350-96.150.
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St. Laurent, Wilfred H., Jr., 4,253,675, Cl. 277-30.000.

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Belson, James M., to JMJ Electronics Corp. Direct current to direct current converter. 4,254,459, Cl. 363-24.000.

Belyaev, Evgeny A.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.

Benasutti, Roger; and Koenig, Thomas, to Conwed Corporation. Task lighting system. 4,254,449, Cl. 362-33.000.

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Bollard, Robert J., 4,254,495, Cl. 370-14.000.
Brooks, Mark A.; and Fallis, Robert E., 4,253,827, Cl. 432-253.000.
Bunger, Dennen J., 4,253,557, Cl. 192-54.000.
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Niles, Paul D.; and Normann, Richard W., 4,253,234, Cl. 29-882.000.

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Raible, Donald A., 4,253,967, Cl. 210-645.000.

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Bennett, Brian S.; Gray, Bruce A. A.; and Todd, Michael A., 4,253,232, Cl. 29-623.100.

Berg, Lawrance F., to Caterpillar Tractor Co. Steering system for cold environments. 4,253,540, Cl. 180-139.000.

Berg, Morris; Hawes, Slater W.; Kennard, Frederick L., III; and Kikuchi, Paul C., to General Motors Corporation. Aging treatment for exhaust gas oxygen sensor. 4,253,934, Cl. 204-195.00S.

Berggren, Kenneth S.: *See*—
Kubat, Josef; and Berggren, Kenneth S., 4,254,175, Cl. 428-213.000.

Bergstrom, Arne. Optoelectronic circuit element. 4,254,333, Cl. 250-221.000.

Bergstrom, William E., to Eppco, Inc. Steam distributor. 4,253,247, Cl. 34-155.000.

Bergwerksverband GmbH: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.

Bernard, Arnold M.: *See*—
Forester, Glen R.; and Bernard, Arnold M., 4,253,643, Cl. 182-239.000.

Bernauer, Lawrence J.; and Gault, Roger T., to Kohler Co. Carburetor starting mixture control. 4,254,064, Cl. 261-64.00E.

Bernstein, Philip; Coffey, James P.; and Varker, Alan E., to ESB Inc. Material for an alkaline cell separator and a process of making. 4,253,927, Cl. 204-159.170.

Bernstein, Philip; Coffey, James P.; and Wilson, James W., to International Nickel Company, Inc., The. Primary galvanic cell. 4,254,192, Cl. 429-181.000.

Bertness, Kevin I. Moisture sensing apparatus and method for an agricultural chemical applicator. 4,253,272, Cl. 47-1.500.

Better Agricultural Goals Corporation: *See*—
Williamson, Robert R., 4,253,507, Cl. 150-1.000.

Betz Laboratories, Inc.: *See*—
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,912, Cl. 162-76.000.
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,969, Cl. 210-699.000.
Becker, Larry W., 4,254,063, Cl. 260-931.000.

Betzing, Hans: *See*—
Dawidson, Herbert; and Betzing, Hans, 4,254,115, Cl. 424-211.000.

Bevelander, Gerrit: *See*—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, 4,253,418, Cl. 119-2.000.

Bezhanov, Tigran V.; Rcheulishvili, Edisher G.; Bezhanov, Vladimir A.; and Kvekveskiri, Anatoly T. Concrete placing apparatus for casting solid walls. 4,253,810, Cl. 425-64.000.

Bezhanov, Vladimir A.: *See*—
Bezhanov, Tigran V.; Rcheulishvili, Edisher G.; Bezhanov, Vladimir A.; and Kvekveskiri, Anatoly T., 4,253,810, Cl. 425-64.000.

Bhushan, Bharat, to Mechanical Technology Incorporated. High temperature low friction surface coating and method of application. 4,253,714, Cl. 308-238.000.

Bier, Peter, to Bayer Aktiengesellschaft. Flame retarded polyethylene terephthalate compositions with improved drip suppression. 4,254,011, Cl. 260-40.00R.

Billet, Alain, to Timex Corporation. Quick hour setting system for timepiece. 4,254,493, Cl. 368-185.000.

Billings, Roger E.; Woolley, Ronald L.; and Anderson, Vaughn R. Hydrogen fuel systems. 4,253,428, Cl. 123-1.00A.

Bio-Melktechnik Swiss Hoefelmayr & Co.: *See*—
Hoefelmayr, Tilman, 4,253,420, Cl. 119-14.550.

Bio-Rad Laboratories, Inc.: *See*—
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,254,096, Cl. 424-8.000.

Birnbaum, Jay E., to American Cyanamid Company. Topical application of prostaglandin hypotensive agents. 4,254,145, Cl. 424-305.000.

Bizzarri, Alfredo. Anti-dazzle devices. 4,253,745, Cl. 351-45.000.

Black, Robert D.; and Koertner, Rodney G., to Deere & Company. Belt drive system with adjustably gauged tightener means. 4,253,343, Cl. 474-135.000.

Blair, Gordon P., to Queens University of Belfast, The. Stratified-charge two-stroke internal combustion engines. 4,253,433, Cl. 123-73.00R.

Blaive, Daniel; and Lafosse, Claude, to Novatome. Automatic grapple. 4,253,695, Cl. 294-95.000.

Blake, John J.: *See*—
DeFreitas, Richard E.; and Blake, John J., 4,254,502, Cl. 375-30.000.

Blanie, Marie J. M. P. Paraffin compositions having improved heat reservoir. 4,253,983, Cl. 252-70.000.

Bliss, Robert L., to University of Utah. Foldable and curvilinearly extensible structure. 4,253,284, Cl. 52-109.000.

Bloeck, Siegfried; and Luthi, Rudolf, to Swiss Aluminium Ltd. Ring and closure for cans. 4,253,584, Cl. 220-359.000.

Blomberg, Peter E., to Aktiebolaget Electrolux. Control system for a mobile absorption refrigerating apparatus. 4,253,311, Cl. 62-148.000.

Blomeyer, Earle B.; Watson, William Q.; and Richardson, Charles T., Jr., to Gladwin, Inc. Vandal resistant public telephone. 4,254,308, Cl. 179-148.00R.

Blouin, Florine A.: *See*—
Rowland, Stanley P.; Blouin, Florine A.; and Shih, Frederick F., 4,254,005, Cl. 260-29.60H.

Blum, Alvin S. Method and apparataus for automatic isoenzyme analysis. 4,254,084, Cl. 422-81.000.

Blytas, George C.; Maas, Rudolf J.; van Aken, Andreas B.; and van Schalkwijk, Christiaan, to Shell Oil Company. Process for sour water treatment. 4,253,928, Cl. 204-180.00P.

Bocharov, Vasily I.; Kuprianov, Jury V.; Popov, Alexandr D.; and Solomin, Vladimir A. Linear induction motor. 4,254,349, Cl. 310-13.000.

Bodai, Balazs I.: *See*—
Bodai, Conrad A.; and Bodai, Balazs I., 4,253,508, Cl. 131-10.500.

Bodai, Conrad A.; and Bodai, Balazs I., to Bodai Industries, Inc. Selective filtering of tobacco smoke by enhanced filtration efficiency. 4,253,508, Cl. 131-10.500.

Bodai Industries, Inc.: *See*—
Bodai, Conrad A.; and Bodai, Balazs I., 4,253,508, Cl. 131-10.500.

Bodig, Bernd: *See*—
Jundt, Werner; Bodig, Bernd; Hohne, Gerd; Pfaff, Georg; Sohner, Gerhard; and Kalkhof, Bernd, 4,253,442, Cl. 123-618.000.

Boeing Company, The: *See*—
Lynn, William F.; and Walker, Gordon M., 4,253,711, Cl. 308-36.100.

Boesch, William J.: *See*—
Maurer, Gernant E.; and Boesch, William J., 4,253,884, Cl. 148-13.100.
Maurer, Gernant E.; and Boesch, William J., 4,253,885, Cl. 148-13.100.

Boger, Manfred: *See*—
Drabek, Jozef; and Boger, Manfred, 4,254,136, Cl. 424-282.000.

Bohn, Hans; and Winckler, Wilhelm, to Behringwerke Aktiengesellschaft. Tissue specific protein and process for preparing same. 4,254,021, Cl. 260-112.00B.

Boileau, Sylvie L.; Caubere, Paul J.; Lecolier, Serge L.; and Raynal, Serge F., to Societe Nationale des Poudres et Explosifs. Novel initiators for anionic polymerization. 4,254,247, Cl. 526-180.000.

Bokfors, Stefan A. J.: *See*—
Larsson, Bertil S. V.; and Bokfors, Stefan A. J., 4,253,314, Cl. 62-332.000.

Bollard, Robert J., to Bendix Corporation, The. Control system including built in test equipment for wiring harness interface testing. 4,254,495, Cl. 370-14.000.

Boogers, Wilhelmus P. L., to B.V. Arenco P.M.B. Device for emptying a belt reel or bobbin filled with tobacco portions. 4,253,906, Cl. 156-584.000.

Borenstein, David E.; and Banning, Jack A., to Phillips Petroleum Company. Bulked and entangled multifilament thermoplastic yarn. 4,253,299, Cl. 57-246.000.

Borg-Warner Corporation: *See*—
Fleenor, Clifton T., Jr., 4,253,972, Cl. 252-8.100.

Bories, David G.: *See*—
Tobias, Luther; and Bories, David G., 4,253,816, Cl. 425-385.000.

Boros, Ladislav J. Self-balancing vibratory drill apparatus. 4,253,531, Cl. 175-56.000.

Bossert, Theodor T., to Richard Hirschmann, Radiotechnischeswerk. Normalization method and apparatus used when quantitatively measuring the reception quality of a received frequency-modulated ultrashort-wave signal. 4,254,505, Cl. 455-146.000.

Boudouris, Angelo. Electronic theater projector. 4,253,749, Cl. 352-187.000.

Bourrez, Jean M.: *See*—
Chemla, Claude N.; and Bourrez, Jean M., 4,254,461, Cl. 364-200.000.

Bovians, Herbert: *See*—
Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased; and Wanders, Marlene, heir, 4,253,815, Cl. 425-235.000.

Bowers, Harry J., Jr.: *See*—
Lovrekovic, Steven N.; and Bowers, Harry J., Jr., 4,253,233, Cl. 29-857.000.

Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, to Imperial Chemical Industries Limited. Disperse monoazo dyestuffs for coloring synthetic textile materials. 4,254,027, Cl. 260-207.000.

Boydston, N. Howard. Apparatus and method for controlling the growth of unwanted plants. 4,253,296, Cl. 56-238.000.

Braathen, Thor F. Articulated, cross-country vehicle. 4,253,536, Cl. 180-9.500.

Bradford, Larry R.: *See*—
Clinefelter, Richard L.; and Bradford, Larry R., 4,253,893, Cl. 156-112.000.

Bradley, Harvey, to Bradley Lifting Corp. Motorized lever-action vertical axis coil grab. 4,253,696, Cl. 294-103.0CG.

Bradley Lifting Corp.: *See*—
Bradley, Harvey, 4,253,696, Cl. 294-103.0CG.

Bradshaw, Norman F., to Schweitzer Industrial Corporation. Method and ducting system for hot gas heat recovery. 4,253,821, Cl. 432-2.000.

Bradvarov, Alexander K.: *See*—
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.

Brakel, Joost, to Koninklijke Volker Stevin N.V. Hopper with floating capacity. 4,253,782, Cl. 406-38.000.

Braml, Michael T. Quick attachment for loader implements. 4,253,793, Cl. 414-723.000.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,254,132, Cl. 424-269.000.

Brandl, Siegfried: *See*—
Fischer, Joachim; Brandl, Siegfried; and Bartoszek, Rudolf, 4,253,781, Cl. 405-260.000.

Brandner, Alexander: *See*—
Kowallik, Jochen; and Brandner, Alexander, 4,254,018, Cl. 260-45.85R.

Brandon, Fred Y.; Chang, Jack P.; Clark, William D.; and Stahlberg, Eugene G., to International Business Machines Corporation. Hollow fuser roll with variable taper. 4,253,392, Cl. 100-155.00R.

Bray, Bruce G.: *See*—
Fonseca, Anthony G.; Bray, Bruce G.; and Kosky, Randolph, 4,253,703, Cl. 299-5.000.

Brazeway, Inc.: *See*—
Hickman, Stephen L.; and Pifer, Clifford E., 4,253,224, Cl. 29-157.00T.

Brennan, Patrick W.: *See*—
Thomsen, Erik J.; and Brennan, Patrick W., 4,253,737, Cl. 350-276.00R.

Brent, James W., Jr.; and Shelley, Lawrence E., to Goodyear Tire & Rubber Company, The. Preparation of high molecular weight polyester. 4,254,253, Cl. 528-272.000.

Bridger, Robert F.; and Schmitt, Kirk D., to Mobil Oil Corporation. Lubricant compositions. 4,253,982, Cl. 252-51.50R.

Bridgestone Tire Company Limited: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,254,398, Cl. 340-58.000.

British Steel Corporation: *See*—
Cundill, Robin T., 4,253,874, Cl. 75-246.000.

Brode, Egon: *See*—
Straub, Ferdinand; Schenck, Hans-Uwe; Lang, Siegfried; and Brode, Egon, 4,254,239, Cl. 525-123.000.

Broekaert, Johan M.: *See*—
Willem, Arnold A.; Broekaert, Johan M.; and De Gueldre, Jean M., 4,254,033, Cl. 250-315.200.

Bromley, James E.; and Yu, Jing-Peir, to Monsanto Company. Filaments having alternate S-twisted and Z-twisted helical sections produced by crimping filaments provided with an eccentric anisotropy of shrinkable property by a preferential cooling on one side upon extrusion thereof through a spinneret. 4,254,181, Cl. 428-371.000.

Bronstein, Benjamin. Pick-up truck edge protector and anchor member. 4,253,785, Cl. 410-110.000.

Brookhart, Marshall R., to Minnesota Mining and Manufacturing Company. Single track digital recorder and circuit for use therein having error correction. 4,254,500, Cl. 371-38.000.

Brooks, Mark A.; and Fallis, Robert E., to Bendix Corporation, The. Registration fixture for sensor. 4,253,827, Cl. 432-253.000.

Brooks, Ray; and Lucero, Joe H., to DeMeritt, George A. Gas purification treatment apparatuses, systems and process. 4,253,851, Cl. 55-90.000.

Brorein, William J., to General Cable Corporation. Flame retardant inside wiring cable with an annealed metal sheath. 4,253,890, Cl. 156-55.000.

Brown, Edward D., to Imperial Chemical Industries Limited. Triazine derivatives. 4,254,122, Cl. 424-249.000.

Brown, Edward M.: *See*—
Lester, William M.; Brown, Edward M.; and Towns, Edward J., 4,253,588, Cl. 222-153.000.

Brown, James. Tag and note clip. 4,253,216, Cl. 24-67.0AR.

Brown, James M.: *See*—
Migrin, Robert S.; and Brown, James M., 4,254,312, Cl. 200-61.250.

Brown, Vincent B.; and Schreiner, Donald G., to Methode Electronics, Inc. Apparatus for applying assembled connector terminals to a plurality of leads. 4,253,222, Cl. 29-33.00F.

Brunninger, Manfred: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,253,398, Cl. 104-2.000.

Brunswick Corporation: *See*—
Floeter, Larry A.; Derber, Howard J.; and Hatch, Edwin B., 4,253,349, Cl. 74-878.000.

Brush, Charles K.; and Weinstock, Joseph, to SmithKline Corporation. 4-(2-Aminoethyl)-7-hydroxy-2-methyl-2,3-dihydrobenzofurans. 4,254,140, Cl. 424-285.000.

Brussel, Richard, to Maschinenfabrik J. Dieffenbacher GmbH & Co. Process and device for the charging, pressing and removing stacked packs from a heat press. 4,253,891, Cl. 156-60.000.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,254,132, Cl. 424-269.000.

Bucyrus-Erie Company: *See*—
Williams, Thomas R., 4,253,579, Cl. 52-655.000.

Budd Company, The: *See*—
Hesser, Kenneth R., 4,253,401, Cl. 105-329.00R.

Budzich, Mieczyslaw; and Fitz, Forest G., Jr., to Nassau Recycle Corporation. Method of depositing copper on copper. 4,254,164, Cl. 427-142.000.

Bullington, Robert E., to Cyklop Strapping Corporation. Strap securing method. 4,253,227, Cl. 29-458.000.

Bunger, Dennen J., to Bendix Corporation, The. Variable load clutch apparatus. 4,253,557, Cl. 192-54.000.

Bungo, Edward M., to General Motors Corporation. Electrical connector. 4,253,718, Cl. 339-59.00R.

Burdette, Stephen D.: *See*—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,253,555, Cl. 192-13.00R.

Burgett, Michael W.: *See*—
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,254,096, Cl. 424-8.000.

Burk, Raymond D., to Monsanto Company. Process for the continuous mass polymerization of polyblends having a bimodal rubber particle size. 4,254,236, Cl. 525-316.000.

Burkhardt, Hans; Metzdorff, Walter; and Schutte, Holger, to Dornier GmbH. Process for automatic pattern evaluation with the aid of a rapid image processing and circuit for carrying out the process. 4,254,399, Cl. 340-146.3MA.

Burlington Industries, Inc.: *See*—
Howard, Joseph W.; and Duggins, Wayne L., 4,253,317, Cl. 66-186.000.
Illman, Walter F.; Conklin, Delano M.; Karnes, Clifton H., Jr.; and Malpass, Robert C., 4,253,840, Cl. 8-115.600.

Burri, Peter: *See*—
Petitpierre, Jean C.; and Burri, Peter, 4,254,032, Cl. 260-315.000.

Burroughs Corporation: *See*—
Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., 4,254,361, Cl. 313-519.000.
McMillan, Andrew H., 4,254,342, Cl. 250-561.000.
Ushida, Susumu, 4,254,378, Cl. 329-137.000.

Burroughs Wellcome Co.: *See*—
Wilkinson, Samuel, 4,254,106, Cl. 424-177.000.

Burrows, James L., to Sanders Associates, Inc. Associative processor. 4,254,476, Cl. 365-49.000.

Burton-Smith, Clement W. Mixing pail. 4,253,772, Cl. 366-130.000.

Busby, James L., to Quality Micro Systems, Inc. Control system for full line variable height and width character and symbol printing. 4,254,409, Cl. 340-731.000.

Busby, W. Ray; and Dunn, Von R., to Rockwell International Corporation. Data processing system with address translation. 4,254,463, Cl. 364-200.000.

Bushee, Richard. Finish work trowel. 4,253,214, Cl. 15-235.400.

Butcher, Larry R.: *See*—
Dubberly, Gregory T.; McGowan, Robert J.; and Butcher, Larry R., 4,253,573, Cl. 209-525.000.

Buter, Roelof, to Akzo N.V. Liquid coating composition based on an ester thiol and an aminoplast, a process for coating a substrate with such a composition, and the substrate thus manufactured. 4,254,185, Cl. 428-460.000.

Buys, Henri, to Transac—Compagnie pour le Developpement des Transactions Automatiques. Pile height sensor in a sheet dispensing machine for dispensing sheets one by one. 4,253,654, Cl. 271-155.000.

B.V. Arenco P.M.B.: *See*—
Boogers, Wilhelmus P. L., 4,253,906, Cl. 156-584.000.

Byrne, Frank, to United States of America, National Aeronautics and Space Administration. Common data buffer system. 4,254,464, Cl. 364-200.000.

Bytzek, Max: *See*—
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,253,879, Cl. 106-165.000.

C.A. Weidmuller KG: *See*—
Wilmes, Manfred, 4,253,629, Cl. 248-68.00R.

C.I.S.E. Centro Informazioni Studi e Esperienze S.p.A.: *See*—
Tondello, Giuseppe; and Malvezzi, Andrea M., 4,254,335, Cl. 250-277.00R.

Cackley, George W.: *See*—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,253,555, Cl. 192-13.00R.

Caesar, Michael B., to Occidental Research Corporation. Contactor and entrainment separator. 4,253,853, Cl. 55-226.000.

Calabrese, Richard A., to Anchor/Darling Industries, Inc. Mechanical snubber assembly. 4,253,551, Cl. 188-134.000.

Callan, Patrick C.: *See*—
Eggenberger, Markus A.; and Callan, Patrick C., 4,253,308, Cl. 60-664.000.

Cambiaso, Cesar L.: *See*—
Limet, Joseph; Cambiaso, Cesar L.; Moussebois, Claude H.; and Masson, Pierre L., 4,253,844, Cl. 23-230.00B.

Cameron Iron Works, Inc.: *See*—
Troxell, John N., Jr., 4,253,638, Cl. 251-1.00A.

Camp, Nat. Steam-tight junction for tubular elements. 4,253,685, Cl. 285-41.000.

Campaigne, Ernest E.; and Selby, Thomas, to Indiana University Foundation. 2-Amino-5-ethylovalyl-6H-1,3,4-thiadiazine oxime. 4,254,259, Cl. 544-8.000.

Campbell, Frank, Jr. Truncated triangular skid pipe. 4,253,826, Cl. 432-234.000.

Campbell, Gerald J.; and Fiordellisi, Stephen J., to General Motors Corporation. Tape drive mechanism. 4,253,277, Cl. 49-352.000.

Campbell, James R.; and Anspach, Roy L., to Mahoney, Thomas P.; and Ruston, Donald A. Metallic core panel and method of making same. 4,254,188, Cl. 428-594.000.

Campbell, Willis R.; Greaser, Randy; and Clevenger, James T., Jr., to Sperry Corporation. Breakaway reset mechanism. 4,253,389, Cl. 100-5.000.

Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, to Agence Nationale de Valorisation de la Recherche (ANVAR). High current ion implanter. 4,254,340, Cl. 250-492.00A.

Canon Kabushiki Kaisha: *See*—
Hanakata, Takayoshi; and Anzai, Shiro, 4,253,774, Cl. 400-87.000.
Kawamura, Naoto; Masegi, Koichi; and Hakamada, Isao, 4,253,735, Cl. 350-409.000.
Matsumura, Isao, 4,253,743, Cl. 351-7.000.
Minoura, Kazuo; and Kitamura, Takashi, 4,253,724, Cl. 350-6.800.
Momiyama, Kikuo, 4,253,736, Cl. 350-422.000.
Yokono, Koujiro; and Nishide, Katsuhiko, 4,254,193, Cl. 430-1.000.

Capaccio, Giancarlo; Smith, Francis S.; and Ward, Ian M., to National Research Development Corp. Process for high modulus polymeric materials. 4,254,072, Cl. 264-210.300.

Capitao, John W.: *See*—
Fancy, Thomas A.; Aunio, Vesa I.; and Capitao, John W., 4,254,344, Cl. 307-86.000.

Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, to Montedison S.p.A. Fluorosulphonyl oxafluoroalkanes fluorosulphonyl olefines and processes for their preparation. 4,254,030, Cl. 260-543.00F.

Carl Freudenberg, Firma: *See*—
Walter, Hermann; and Frohlich, Georg, 4,253,694, Cl. 294-93.000.

Carlson, Russell L., to United Technologies Corporation. Thermally compensated mirror. 4,253,739, Cl. 350-310.000.

Carn, Patrick. Sail boards. 4,253,209, Cl. 9-310.00E.

Carnation Company: *See*—
Ross, Nicholas D.; White, George A.; and Allinson, William L., 4,254,153, Cl. 426-441.000.

Carpenter, Stephen K.: *See*—
Schick, Lloyd A.; and Carpenter, Stephen K., 4,254,082, Cl. 422-55.000.

Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., to Richardson-Merrell Inc. Piperidine derivatives. 4,254,129, Cl. 424-267.000.

Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., to Richardson-Merrell Inc. Piperidine derivatives. 4,254,130, Cl. 424-267.000.

Carrico, Philip H.: *See*—
Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., 4,254,183, Cl. 428-213.000.

Carrier Corporation: *See*—
Wright, William E.; and Moyer, Ross, 4,253,225, Cl. 29-157.30R.

Carrig, Thomas R.; and Kraus, James T., to Sheller-Globe Corporation. Desk tray and method of making the same. 4,253,402, Cl. 108-27.000.

Carroll, James C.: *See*—
Lewis, James P.; and Carroll, James C., 4,254,504, Cl. 455-76.000.

Carson, Christopher E.: *See*—
Carson, William S., III; Carson, Louis A.; Carson, Christopher E.; and Friedrich, Larry, 4,254,179, Cl. 428-311.000.

Carson, Louis A.: *See*—
Carson, William S., III; Carson, Louis A.; Carson, Christopher E.; and Friedrich, Larry, 4,254,179, Cl. 428-311.000.

Carson, William S., III; Carson, Louis A.; Carson, Christopher E.; and Friedrich, Larry, to Scottdel, Inc. Fragrance impregnated foam and method of making the same. 4,254,179, Cl. 428-311.000.

Cartografica Santerno S.p.A.: *See*—
Pistone, Marco M., 4,253,897, Cl. 156-256.000.

Carver, Robert G., to Creative Cartons of Ashland, Inc. Collapsible stereoscopic viewer. 4,253,732, Cl. 350-140.000.

Cash, Theodore P.: *See*—
Holt, John P.; and Cash, Theodore P., 4,253,590, Cl. 222-590.000.

Cassella Aktiengesellschaft: *See*—
Bauer, Wolfgang; and Ribka, Joachim, 4,254,026, Cl. 260-158.000.

Cassinelli, Giuseppe; Arcamone, Federico; and di Marco, Aurelio, to Farmitalia Carlo Erba S.p.A. Pentofuranosyl anthracyclines, intermediates in and method for their preparation and compositions and use thereof. 4,254,110, Cl. 424-180.000.

Caterpillar Tractor Co.: *See*—
Berg, Lawrance F., 4,253,540, Cl. 180-139.000.
Fee, David M., 4,253,674, Cl. 277-5.000.
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,253,555, Cl. 192-13.00R.
Haslett, Glenn M., 4,253,708, Cl. 305-47.000.

Caubere, Paul J.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Lecolier, Serge L.; and Raynal, Serge F., 4,254,247, Cl. 526-180.000.

Cavazza, Claudio. Pharmaceutical composition for total parenteral nutrition. 4,254,147, Cl. 424-316.000.

Cavazza, Claudio: *See*—
deWitt, Paolo; and Diamanti, Enrico, 4,254,053, Cl. 260-501.150.

Cecchi, Carlo F.; and Barbagli, Rino O., to Fiat-Allis Macchine Movimento Terra S.p.A. Distributor device for hydraulic circuits. 4,253,639, Cl. 251-44.000.

Ceeco Machinery Manufacturing Limited: *See*—
Varga, Joseph, 4,253,298, Cl. 57-13.000.

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Pacholski, Jan; Kujawski, Zenon; Janczyk, Ryszard; and Bartczak, Marian, 4,253,297, Cl. 57-5.000.

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Hammond, Kenneth G.; and Chafetz, Harry, 4,253,980, Cl. 252-34.000.

Chambers, Gregory R.; and Smith, William E., to General Electric Company. Acidic mixed oxide catalytic de-alkylation of tertiary-alkyl-ether-alkanols. 4,254,290, Cl. 568-866.000.

Chambers, Joseph W., Sr., to Disposable Waste Systems, Inc. High integrity fluid pressure rotary shaft seal. 4,253,713, Cl. 308-187.100.

Chan, David C. K., to Chevron Research Company. 1,1-Dioxo-2-halohydrocarbylthio-1,2-benzoisothiazolidines. 4,253,865, Cl. 71-91.000.

Chance, Davey J.: *See*—
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Chang, Jack P.: *See*—
Brandon, Fred Y.; Chang, Jack P.; Clark, William D.; and Stahlberg, Eugene G., 4,253,392, Cl. 100-155.00R

Chapman, Alan T.: *See*—
Cochran, Joe K., Jr.; Lee, Jae-Do; and Chapman, Alan T., 4,253,221, Cl. 29-25.180.

Chastel, Jacques: *See*—
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Chaudhuri, Partha S., to Westvaco Corporation. Method for determining the surface abrasiveness of a paper machine web. 4,253,913, Cl. 162-198.000.

Chaumont, Jacques: *See*—
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, 4,254,340, Cl. 250-492.00A.

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Chemla, Claude N.; and Bourrez, Jean M., to Compagnie International l'Informatique-Cll Honeywell Bull. Method and apparatus for determining linking addresses for microinstructions to be executed in a control memory of a data-processing system. 4,254,461, Cl. 364-200.000.

Chen, Di: *See*—
Anderson, Rogers H.; G., Enrique B.; and Chen, Di, 4,253,731, Cl. 350-96.340.

Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., to E. R. Squibb & Sons, Inc. Ostomy adhesive. 4,253,460, Cl. 128-283.000.

Chenault, David O., to Toltec Industries Inc. Method and apparatus for forming a segmented mirror parabolic solar collector trough. 4,253,895, Cl. 156-163.000.

Cheng, Jiin-Duey, to Du Pont de Nemours, E. I., and Company. Insecticidal carbamoyl sulfides. 4,254,141, Cl. 424-298.000.
Cherry, John R. Body support for a casket. 4,253,206, Cl. 5-82.00R.
Chevron Research Company: *See*—
Chan, David C. K., 4,253,865, Cl. 71-91.000.
Leonard, Donald J., 4,253,404, Cl. 110-188.000.
Wall, Robert G.; Suzuki, Shigeto; and Wilkes, John B., 4,254,289, Cl. 568-857.000.
Chidsey, Francis A., Jr., to Container Corporation of America. Carrier partition arrangement. 4,253,565, Cl. 206-190.000.
Childs, William H.; and Mahle, Christoph E., to Communications Satellite Corporation. Two-dimensional (planar) TDMA/broadcast microwave switch matrix for switched satellite application. 4,254,385, Cl. 333-104.000.
Chimicasa GmbH: *See*—
Dwivedi, Basant K.; and Sampathkumar, Prathivadibhayankaram S., 4,254,155, Cl. 426-548.000.
Chiola, Vincent: *See*—
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Christian, Alfred W., to Hydrotile Canada Limited. Packerhead and core control system. 4,253,814, Cl. 425-150.000.
Chun, Joo H. Prefabricated wall panel. 4,253,288, Cl. 52-454.000.
Chung, Daniel A.; and Lawrence, John P., to Goodyear Tire & Rubber Company, The. Aromatic diamines and polyurethanes cured thereby. 4,254,272, Cl. 560-19.000.
Church, Carl W.; Church, Roderick C.; and Church, Daniel K. Material for producing a layered building panel. 4,254,178, Cl. 428-310.000.
Church, Daniel K.: *See*—
Church, Carl W.; Church, Roderick C.; and Church, Daniel K., 4,254,178, Cl. 428-310.000.
Church, Roderick C.: *See*—
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Ciba-Geigy Corporation: *See*—
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Green, George E., 4,254,012, Cl. 260-42.180.
Kristinsson, Haukur; and Traber, Walter, 4,254,133, Cl. 424-273.00R.
Petitpierre, Jean C.; and Burri, Peter, 4,254,032, Cl. 260-315.000.
Schmid, Wolfgang, 4,254,120, Cl. 424-248.520.
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Cilento, Rudolfo D.: *See*—
Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,253,460, Cl. 128-283.000.
Citrus Central, Inc.: *See*—
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Clarion Co., Ltd.: *See*—
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Clark Control, Inc.: *See*—
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Clark, Jack L.; and Naud, William T. Golf ball putter. 4,253,667, Cl. 273-168.000.
Clark, William D.: *See*—
Brandon, Fred Y.; Chang, Jack P.; Clark, William D.; and Stahlberg, Eugene G., 4,253,392, Cl. 100-155.00R.
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Claybaker, LeRoy A., to General Electric Company. Paper plies impregnated with oil modified phenolic resole varnish. 4,254,187, Cl. 428-498.000.
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Campbell, Willis R.; Greaser, Randy; and Clevenger, James T., Jr., 4,253,389, Cl. 100-5.000.
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Flint, John R.; Rabindran, Karavattuveetil G.; and Clevenger, Jerry W., 4,254,364, Cl. 315-311.000.
Clinefelter, Richard L.; and Bradford, Larry R., to Gates Rubber Company, The. Non-pneumatic tire. 4,253,893, Cl. 156-112.000.
Coal Industry (Patents) Limited: *See*—
Cooke, John, 4,253,494, Cl. 137-625.230.
James, Granville C., 4,253,854, Cl. 55-227.000.
Coalite Group Limited: *See*—
Gladwin, Keith, 4,254,288, Cl. 568-652.000.
Cochran, James A., Jr. Sequential flashing device for personal ornamentation. 4,254,451, Cl. 362-103.000.
Cochran, Joe K., Jr.; Lee, Jae-Do; and Chapman, Alan T., to Georgia Tech Research Institute. Method of producing low voltage field emission cathode structure. 4,253,221, Cl. 29-25.180.
Coenen, Alfred; Kosswig, Kurt; and Wienhofer, Ekkehard, to Chemische Werke Huls AG. Method for separating hydrogen chloride and hydrogen bromide. 4,254,092, Cl. 423-497.000.
Coffey, James P.: *See*—
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Bernstein, Philip; Coffey, James P.; and Wilson, James W., 4,254,192, Cl. 429-181.000.
Cogbill, Everett C.: *See*—
Hibbitts, Charles H.; Price, Byron F.; Cogbill, Everett C.; Kelly, James G.; and Glass, James E., 4,253,474, Cl. 131-140.00P.
Colbert, Robert E. Welding wire dispenser. 4,253,624, Cl. 242-128.000.
Cole, John M.: *See*—
Logan, Maurus C.; Cole, John M.; and Garner, Peter, 4,253,730, Cl. 350-96.210.
Cole, Michael A.; and Morgan, Walter W., to Western Electric Company, Inc. Apparatus for coiling and binding strand material. 4,253,289, Cl. 53-53.000.
Cole, William A.: *See*—
Ford, Allan L.; and Cole, William A., 4,253,576, Cl. 211-60.00R.
Coles, Donna C.; and Honstein, Jerry P. Orthodontic appliance. 4,253,828, Cl. 433-6.000.
Colgate-Palmolive Company: *See*—
Ehrlich, Robert L., 4,253,842, Cl. 8-137.000.
Hendrickson, Thomas C.; and Liebowitz, Marvin, 4,254,139, Cl. 428-283.000.
Collet, James R. Theft deterrent locking nut. 4,253,509, Cl. 411-214.000.
Colonial Mirror & Glass Corp.: *See*—
Mason, Robert C.; and Scerbo, Joseph, 4,253,910, Cl. 156-633.000.
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Colt Industries Operating Corp.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,254,320, Cl. 219-69.00C.
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Columbia Industries, Inc.: *See*—
Miller, Charles M., Jr.; and Orlando, Samuel J., 4,253,665, Cl. 273-63.00G.
Columbia Steel Casting Co., Inc.: *See*—
Hay, Harold L., 4,253,706, Cl. 299-94.000.
Columbus, Richard L., to Eastman Kodak Company. Structural configuration for transport of a liquid drop through an ingress aperture. 4,254,083, Cl. 422-55.000.
Combustion Engineering, Inc.: *See*—
Sullivan, Robert P., 4,253,492, Cl. 137-601.000.
Commercial Affiliates, Inc.: *See*—
Schaffer, Daniel I.; and Elsinger, Carl R., 4,253,259, Cl. 40-492.000.
Communications Satellite Corporation: *See*—
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Kreutel, Randall W., Jr., 4,254,421, Cl. 343-754.000.
Communications Technology Corporation: *See*—
Crosier, Claire G., 4,253,720, Cl. 339-75.00M.
Compagnie Europeenne d'Accumulateurs: *See*—
Dalibard, Gerard; and Viaud, Nicole, 4,253,871, Cl. 75-166.00B.
Compagnie Francaise des Petroles: *See*—
Dumas, Jean-Claude, 4,254,478, Cl. 367-2.000.
Compagnie Generale d'Electricite S.A.: *See*—
Jeunhomme, Luc; and Pocholle, Jean-Paul, 4,253,727, Cl. 350-96.150.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
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Rocton, Lucien, 4,253,729, Cl. 350-96.200.
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Grognu, Paul D., 4,253,779, Cl. 405-169.000.
Cone-Blanchard Machine Company: *See*—
Youden, David H., 4,253,359, Cl. 82-21.00B.
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Illman, Walter F.; Conklin, Delano M.; Karnes, Clifton H., Jr.; and Malpass, Robert C., 4,253,840, Cl. 8-115.600.
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Container Corporation of America: *See*—
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Cook, Kenneth J.: *See*—
Juengel, Richard O.; and Cook, Kenneth J., 4,254,472, Cl. 364-900.000.
Cooke, John, to Coal Industry (Patents) Limited. Constant speed unidirectional rotary sequence valve. 4,253,494, Cl. 137-625.230.
Cooney, Joseph J.; and Mannion, A. Joel, to Raytheon Company. Microprocessor having dual frequency clock. 4,254,475, Cl. 364-900.000.
Cooper, Leon N.; and Elbaum, Charles, to Nestor Associates. Information processing system using threshold passive modification. 4,254,474, Cl. 364-900.000.
Coors Container Company: *See*—
Peer, A. Dean, Jr., 4,254,173, Cl. 428-204.000.

Corderoy, Clive J.; and Taylor, Stanley E. Apparatus for handling elongate flexible material. 4,253,619, Cl. 242-86.50R.

Cormier, Raymond G., to Nashua Corporation. Extender guides for photoconductive drum removal. 4,253,758, Cl. 355-3.0DR.

Cornelius, Jack M., to Barron Industries, Inc. Movable blade damper. 4,253,483, Cl. 137-240.000.

Corning Glass Works: *See*—
McDonald, Hugh C.; Odstrchel, Gerald; and Takeguchi, Milton M., 4,254,218, Cl. 435-7.000.

Cornish, Judson E. Teaching machine apparatus. 4,253,248, Cl. 434-227.000.

Cottrell, Henry L.; and Faith, Wesley A., to VFE Corp. Method and a system for incinerating combustible wastes. 4,253,405, Cl. 110-222.000.

Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., to Merck & Co., Inc. Copolymers of N,N-dimethylacrylamide and acrylamide. 4,254,249, Cl. 526-303.000.

Coupland, Keith: *See*—
Alexander, A. Gordon; and Coupland, Keith, 4,253,979, Cl. 252-33.600.

Courtaulds Limited: *See*—
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CPC International Inc.: *See*—
Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,254,225, Cl. 435-96.000.

Craig, Roderick I., to Eltra Corporation. Typesetter character generating apparatus. 4,254,468, Cl. 364-523.000.

Creative Cartons of Ashland, Inc.: *See*—
Carver, Robert G., 4,253,732, Cl. 350-140.000.

Crompton & Knowles Corporation: *See*—
Bannigan, Vincent W., Jr., 4,253,843, Cl. 8-624.000.

Cronson, Harry M.; Ross, Gerald F.; Rao, Basrur R.; Lerchenmueller, Werner; and Drew, Prentis B., to Sperry Corporation. Collision avoidance system using short pulse signal reflectometry. 4,254,418, Cl. 343-112.0CA.

Crooks, Walter; and Pennington, Keith S., to International Business Machines Corporation. Apparatus for re-inking a ribbon in a thermal transfer printing system. 4,253,775, Cl. 400-198.000.

Crosier, Claire G., to Communications Technology Corporation. Front tap shoe. 4,253,720, Cl. 339-75.00M.

Cross, Michael W. A.: *See*—
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Cross, Stephen D.; Belk, Wilber C.; Frost, Elmer F., Jr.; and Easter, William M., to FMC Corporation. Transfer conveyor for frozen confections. 4,253,560, Cl. 198-479.000.

Cumberland Packing Corp.: *See*—
Eisenstadt, Marvin E., 4,254,154, Cl. 426-548.000.

Cummins Engine Company, Inc.: *See*—
Reed, Robert H.; and Yagger, David F., 4,253,325, Cl. 73-1.00C.

Cundill, Robin T., to British Steel Corporation. Alloys steel powders. 4,253,874, Cl. 75-246.000.

Curtiss, Walter W., Jr., to Goodyear Tire & Rubber Company, The. Tire with supportable sidewalls. 4,253,511, Cl. 152-330.0RF.

CX Corporation: *See*—
Oaks, Frank B.; and Ramquist, Amos H., 4,253,788, Cl. 414-403.000.

Cyklop Strapping Corporation: *See*—
Bullington, Robert E., 4,253,227, Cl. 29-458.000.

Dahlstrom, Robert V.: *See*—
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., 4,254,096, Cl. 424-8.000.

Dahm, Manfred: *See*—
Baatz, Gunther; Schafer, Walter; Findeisen, Kurt; and Dahm, Manfred, 4,253,682, Cl. 282-27.500.

Dai Nippon Printing Co., Ltd.: *See*—
Mizuno, Shogo; and Ishii, Sumio, 4,253,838, Cl. 8-471.000.

Daido Kogyo Co., Ltd.: *See*—
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Daikin Kogyo Co., Ltd.: *See*—
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Dainippon Ink and Chemicals, Inc.: *See*—
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Dalal, Vikram L., to University of Delaware. Multiple gap photovoltaic device. 4,253,882, Cl. 136-249.000.

Dalibard, Gerard; and Viaud, Nicole, to Compagnie Europeenne d'Accumulateurs. Alloys for making electrode supports in lead accumulators. 4,253,871, Cl. 75-166.00B.

Dallaire, Raymond, to P. H.-Tech., Inc. Roller device for a sliding closure. 4,253,278, Cl. 49-420.000.

Dalmaso, George C., to Inco Safety Products Company. Energy absorbing lanyard. 4,253,544, Cl. 182-3.000.

DaLomba, Muriel A.: *See*—
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D'Amato, Michael A., to Flo-Tork Inc. Low speed hydraulic motor with counter balanced planetating drive ring and spring biased vanes. 4,253,806, Cl. 418-61.00R.

D'Angelo, Joseph J.; and Maccherone, Lawrence S., to Flexible Design Packaging Machine Company. Method and apparatus for making cushioned shipping bags. 4,253,892, Cl. 156-84.000.

Daniel, John K.: *See*—
Sunder, Shyam; Daniel, John K.; and Peet, Norton P., 4,254,125, Cl. 424-250.000.

Daniels, Nicholas R., to Emerson Electric Co. Electric motor mounting system. 4,253,634, Cl. 248-604.000.

Danna, Dominick: *See*—
Moore, William C.; Newman, Richard W.; and Danna, Dominick, 4,253,447, Cl. 128-6.000.

Danon, Joseph S.; and Kwast, Theodore E., to Singer Company, The. Valve operator. 4,253,484, Cl. 137-269.000.

Daulton, Everett. Tennis serve training device. 4,253,664, Cl. 273-29.00A.

Dauvergne, Jean Louis R., to Societe Anonyme Francaise du Ferodo. Assisted braking device. 4,253,305, Cl. 60-550.000.

Davies, William B.: *See*—
Ashford, David W.; Davies, William B.; and Hartley, Sydney S., 4,253,249, Cl. 434-22.000.

Davis, Jack R.; and Gold, Philip S., to Xerox Corporation. Vector to raster processor. 4,254,467, Cl. 364-521.000.

Davis, Kenneth L., to United States of America, Navy. Silicon barrier Josephson junction configuration. 4,253,230, Cl. 29-580.000.

Davis, Philip S.: *See*—
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,912, Cl. 162-76.000.
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,969, Cl. 210-699.000.

Davis, Robert H.: *See*—
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Davis, William W.: *See*—
Griffith, Ernest S.; and Davis, William W., 4,254,501, Cl. 375-9.000.

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Davy International AG: *See*—
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Dawidson, Herbert; and Betzing, Hans, to A. Nattermann & Cie. GmbH. Phospholipid derivative with an antilipemic and antiarteriosclerotic effect. 4,254,115, Cl. 424-211.000.

Daxinger, Helmut: *See*—
Pulker, Hans K.; and Daxinger, Helmut, 4,254,159, Cl. 427-38.000.

Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., to Shell Oil Company. 2-Aminomethylcyclopropyl-1,1-dialkylacetals. 4,254,057, Cl. 564-455.000.

Dayco Corporation: *See*—
Miranti, Joseph P., Jr., 4,253,836, Cl. 474-200.000.

Dayton, Birney D.; Rorden, William L.; and Stanger, Leon J., to Grass Valley Group, Inc., The. Noise eliminator for television synchronizing signal separating circuits. 4,254,435, Cl. 358-155.000.

De Laval Separator Company, The: *See*—
Yang, Denis C., 4,253,419, Cl. 119-14.540.

Debat, Jacques; Lemoine, Jean; and Lier nee Gabillault, Francoise, to Laboratoire Debat. Inula extract, its method of preparation and its use as pharmaceutical. 4,254,112, Cl. 424-195.000.

DeCristofaro, Nicholas J.; and Henschel, Claude, to Allied Chemical Corporation. Homogeneous brazing foils of copper based metallic glasses. 4,253,870, Cl. 75-159.000.

Deere & Company: *See*—
Black, Robert D.; and Koertner, Rodney G., 4,253,343, Cl. 474-135.000.
Intveld, Dwayne J., 4,253,537, Cl. 180-90.000.
Klimmer, Josef W., 4,253,471, Cl. 130-22.00R.
Sullivan, James F.; and Arnold, Loren G., 4,253,528, Cl. 172-386.000.

Defoe, Richard A.: *See*—
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DeFreitas, Richard E.; and Blake, John J., to DeltaLab Research, Inc. Digital encoding circuitry. 4,254,502, Cl. 375-30.000.

de Gaudemaris, Gabriel: *See*—
Juguin, Bernard; Franck, Jean-Pierre; Le Page, Jean-Francois; and de Gaudemaris, Gabriel, 4,254,294, Cl. 585-525.000.

Dege, Gerald J.; Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Chemical Corporation. Method of making novel two component bipolar ion exchange membranes. 4,253,900, Cl. 156-309.300.

De Gueldre, Jean M.: *See*—
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Del Monte Corporation: *See*—
Ross, Edward E., 4,253,574, Cl. 209-668.000.

De Lorean, John Z. Integral wheel and pneumatic tire. 4,253,510, Cl. 152-9.000.

Delta Materials Research Limited: *See*—
Hart, William B., 4,253,611, Cl. 239-602.000.

Delta Plastics Limited: *See*—
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DeltaLab Research, Inc.: *See*—
DeFreitas, Richard E.; and Blake, John J., 4,254,502, Cl. 375-30.000.

DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida, Jun-ichi, to Wisconsin Alumni Research Foundation. 1α-Hydroxy-2β-fluorocholecalciferol. 4,254,045, Cl. 260-397.200.

DeMeritt, George A.: *See*—
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Dengah, Rudy F.: *See*—
Kazen, Douglas H.; and Dengah, Rudy F., 4,253,830, Cl. 433-77.000.

Dennison Manufacturing Company: *See*—
Jodrey, Robert M.; and Young, Kenneth, 4,253,904, Cl. 156-497.000.
Denny, William D., Jr., to Procter & Gamble Company, The. Toothpaste compositions. 4,254,101, Cl. 424-52.000.
Derber, Howard J.: *See*—
Floeter, Larry A.; Derber, Howard J.; and Hatch, Edwin B., 4,253,349, Cl. 74-878.000.
Derks, Petrus J. A. M.; Van Dommelen, Joannes H. J.; and Dieleman, Jan, to U.S. Philips Corporation. Camera tube with graduated concentration of tellurium in target. 4,254,359, Cl. 313-386.000.
DeSaro, Charles: *See*—
Milzoff, Fred L.; and DeSaro, Charles, 4,253,672, Cl. 273-424.000.
De Socio, Paul; Kaporsvsky, Morris; and Tropp, Joel S., to Jubilee Foods, Inc. Imitation cheese base. 4,254,156, Cl. 426-565.000.
De Tarr, Vincent. Garage door spring tensioning apparatus. 4,253,350, Cl. 81-3.00R.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Kleemann, Axel; Weigel, Horst; and Scherberich, Paul, 4,254,035, Cl. 260-340.50R.
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Devia-Manjarres, N.: *See*—
Sperling, L. H.; Manson, J. A.; and Devia-Manjarres, N., 4,254,002, Cl. 260-23.0ST.
Devlin, Barry R. J.: *See*—
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,254,057, Cl. 564-455.000.
Dewar, Robert, Jr.; and Iadipaolo, Rene M., to General Motors Corporation. Visual motion tracking system. 4,254,433, Cl. 358-105.000.
deWitt, Paolo; and Diamanti, Enrico, to Cavazza, Claudio. Process for manufacturing D camphorate of L carnitinamide and D camphorate of D carnitinamide. 4,254,053, Cl. 260-501.150.
Diamanti, Enrico: *See*—
deWitt, Paolo; and Diamanti, Enrico, 4,254,053, Cl. 260-501.150.
Diamond Shamrock Corporation: *See*—
Krsek, George, 4,254,008, Cl. 260-33.40R.
Dickey-john Corporation: *See*—
Funk, David B., 4,253,766, Cl. 356-418.000.
Dicoi, Ovidiu; and Wewer, Hans, to Davy International AG. Column system process for polyester plants. 4,254,246, Cl. 526-68.000.
Didier-Werke AG: *See*—
Laux, Walter; Zettel, Martin; and Ambrosius, Erich, 4,253,410, Cl. 110-331.000.
Dieleman, Jan: *See*—
Derks, Petrus J. A. M.; Van Dommelen, Joannes H. J.; and Dieleman, Jan, 4,254,359, Cl. 313-386.000.
Diesel Kiki Co., Ltd.: *See*—
Ishizuka, Yutaka; and Kobayashi, Shinichi, 4,253,809, Cl. 418-152.000.
Di Francescantonio, Francesco, to Fiat Veicoli Industriali S.p.A. Motor vehicle with tiltable cab. 4,253,700, Cl. 296-190.000.
Dijkmans, Eise C.; and Schoofs, Franciscus A. C. M., to U.S. Philips Corporation. Circuit for the protection of telephone lines. 4,254,442, Cl. 361-56.000.
di Marco, Aurelio: *See*—
Cassinelli, Giuseppe; Arcamone, Federico; and di Marco, Aurelio, 4,254,110, Cl. 424-180.000.
Disposable Waste Systems, Inc.: *See*—
Chambers, Joseph W., Sr., 4,253,713, Cl. 308-187.100.
Dittrich, Werner; Nestler, Heinz; and Schnippering, Friedhelm, to Dynamit Nobel Aktiengesellschaft. Binding agent for coating compositions having a long shelf life. 4,254,009, Cl. 260-40.00R.
Dmitrowsky, Igor. Aircraft attachable to the body of a pilot. 4,253,625, Cl. 244-4.00A.
Dr. Eduard Fresenius Chemisch-pharmazeutisch Industrie KG, Apparatebau KG: *See*—
Schindler, Johannes G.; Schal, Wilfred; and Dr. Eduard Fresenius Chemisch-pharmazeutisch Industrie KG, Apparatebau KG, 4,253,456, Cl. 128-214.00R.
Dr.-Ing. Reiner Foerst GmbH: *See*—
Foerst, Reiner, 4,253,373, Cl. 84-454.000.
Dr. Johannes Heidenhain GmbH: *See*—
Feichtinger, Kurt, 4,253,240, Cl. 33-172.00E.
Doerner, Frank. Base portion for tiltable chair. 4,253,632, Cl. 248-405.000.
Doi, Koichi; Mori, Fumio; Ichinose, Isao; Ogimoto, Tetsuomi; and Kitakawa, Katsuhiko, to Toyo Seikan Kaisha, Ltd. Container cover with peelable liner. 4,253,580, Cl. 215-228.000.
Dolfini, Joseph E.: *See*—
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,254,129, Cl. 424-267.000.
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Dominguez, Richard J. G.; and Rice, Doris M., to Texaco Development Corp. Heat stable reaction injection molded elastomers. 4,254,069, Cl. 264-51.000.
Domtar Inc.: *See*—
Karnis, Alkibiadis, 4,253,329, Cl. 73-63.000.
Karnis, Alkibiadis, 4,253,945, Cl. 209-211.000.
Donovan, John S. Gas operated automatic weapon. 4,253,378, Cl. 89-188.000.
Dorman, Richard A.; and Kissinger, Curtis D., to Mechanical Technology Incorporated. Calibration circuit for fiber optic proximity instrument. 4,254,331, Cl. 250-205.000.
Dornier GmbH: *See*—
Burkhardt, Hans; Metzdorff, Walter; and Schutte, Holger, 4,254,399, Cl. 340-146.3MA.
Dotson, Ronald L.: *See*—
Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., 4,253,923, Cl. 204-98.000.
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Aberegg, Richard E.; Bell, George H., Jr.; Douglass, Kendal B.; and Reed, Lee R., Jr., 4,253,790, Cl. 414-420.000.
Dow Chemical Company, The: *See*—
Aslakson, R. Corbin, 4,253,901, Cl. 156-327.000.
Filter, Harold E.; and Roberson, Keith, 4,253,985, Cl. 252-301.10W.
Grinstead, Robert R., 4,254,087, Cl. 423-24.000.
Hefner, Robert E., Jr., 4,253,944, Cl. 209-166.000.
Markley, Lowell D., 4,254,144, Cl. 424-304.000.
McEwen, Gerald K.; and Thomas, Lowell S., 4,254,014, Cl. 260-45.7PH.
Sunder, Shyam; Daniel, John K.; and Peet, Norton P., 4,254,125, Cl. 424-250.000.
Thomas, Lowell S.; and Petrella, Ronald V., 4,254,015, Cl. 260-45.90R.
Doyle, Daniel L.: *See*—
Streczyn, Michael V.; Luther, Ronald B.; and Doyle, Daniel L., 4,254,081, Cl. 422-46.000.
Draai, Willem T.; and Rongen, Josephus W., to Oce-van der Grinten N.V. Process for magnetically transferring a powder image. 4,254,206, Cl. 430-126.000.
Drabek, Jozef; and Boger, Manfred, to Ciba-Geigy Corporation. Phenolic esters of N-trialkylureidothio-N-methyl carbamic acids useful as insecticides. 4,254,136, Cl. 424-282.000.
Dragerwerk Aktiengesellschaft: *See*—
Pasternack, Adalbert, 4,253,328, Cl. 73-40.700.
Warncke, Ernst, 4,253,454, Cl. 128-202.260.
Dresser Industries, Inc.: *See*—
Goodman, Lee, 4,253,710, Cl. 308-8.200.
Sharki, Martin J.; Rehm, William A.; and Renfro, Woodrow E., 4,253,530, Cl. 175-25.000.
Drew, Prentis B.: *See*—
Cronson, Harry M.; Ross, Gerald F.; Rao, Basrur R.; Lerchenmueller, Werner; and Drew, Prentis B., 4,254,418, Cl. 343-112.0CA.
Dubberly, Gregory T.; McGowan, Robert J.; and Butcher, Larry R., to Mead Corporation, The. Apparatus for handling empty beverage containers. 4,253,573, Cl. 209-525.000.
Du Bois, Loring E.; and Simpson, Lawrence D., to Western Electric Company, Inc. Method of labelling directional characteristics of an article having two opposite major surfaces. 4,253,280, Cl. 51-283.00R.
Duckworth, James J.; and Simon, David J., to Singer Company, The. High accuracy shaft angle linear DC voltage conversion using low accuracy devices. 4,254,369, Cl. 318-654.000.
Dudley, Robert H.; and Areaux, Larry D., to Reclamet, Inc. Chip discharge for continuous chip wringer. 4,253,960, Cl. 210-373.000.
Dudrey, Lawrence L. Fuel additive system for vehicles. 4,253,436, Cl. 123-198.00A.
Duffer, Paul F.: *See*—
Franz, Helmut; Duffer, Paul F.; and Hanlon, James H., 4,254,046, Cl. 260-429.700.
Duggins, Wayne L.: *See*—
Howard, Joseph W.; and Duggins, Wayne L., 4,253,317, Cl. 66-186.000.
Dukmasov, Vladimir G.: *See*—
Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshik, Garifulla; and Kuznetsov, Sergei L., 4,253,322, Cl. 72-245.000.
Dulux Australia Ltd.: *See*—
Fox, Susan M.; and Gibson, David V., 4,254,003, Cl. 260-29.6NR.
Dumas, Jean-Claude, to Compagnie Francaise des Petroles. Measurement of distance using ultrasonic signals. 4,254,478, Cl. 367-2.000.
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Busby, W. Ray; and Dunn, Von R., 4,254,463, Cl. 364-200.000.
Du Pont de Nemours, E. I., and Company: *See*—
Cheng, Jiin-Duey, 4,254,141, Cl. 424-298.000.
Foss, Robert P.; and Jacobson, Henning W., 4,254,238, Cl. 525-335.000.
Van Stappen, Albert L., 4,254,210, Cl. 430-285.000.
Weigert, Frank J., 4,254,061, Cl. 564-479.000.
Durell, William E. Automated dredging with vacuum assist. 4,253,255, Cl. 37-62.000.
Duro-Test Corporation: *See*—
Walsh, Peter, 4,254,363, Cl. 315-248.000.
Durso, Donald F., to Texas A & M University System. Process for the preparation of cellulose ether derivatives. 4,254,258, Cl. 536-98.000.
Dutcher, Robert G.; O'Neill, Edward G.; and Sandstrom, Richard D., to Medtronic, Inc. Stylet. 4,253,462, Cl. 128-303.00R.
Duwel, Dieter: *See*—
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Dwivedi, Basant K.; and Sampathkumar, Prathivadibhayankaram S., to Chimicasa GmbH. Preparing neohesperidin dihydrochalcone sweetener composition. 4,254,155, Cl. 426-548.000.
Dworkin, Robert D.; and Larkin, William A., to M&T Chemicals Inc. Organotin mercaptoalkanol esters and alkoxides containing sulfide groups. 4,254,017, Cl. 260-45.75S.
Dybas, Richard A.: *See*—
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Dynamic Sciences International, Inc.: *See*—
Land, Robert P., 4,254,465, Cl. 364-453.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Dittrich, Werner; Nestler, Heinz; and Schnippering, Friedhelm, 4,254,009, Cl. 260-40.00R.
Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, 4,254,270, Cl. 556-413.000.
E. C. H. Will (GmbH & Co.): *See*—
Lemburg, Jorn-Uwe; and Stolley, Dieter, 4,253,499, Cl. 140-92.700.
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Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,253,460, Cl. 128-283.000.
Rovnyak, George C., 4,254,267, Cl. 548-379.000.
Sprague, Peter W., 4,254,044, Cl. 260-347.800.
E-Systems, Inc.: *See*—
Fulghum, Donald P.; and Pate, Jerry W., 4,254,304, Cl. 179-2.0DP.
Easley, William G., to Filterspun, Inc. Apparatus and system for forming wound filters. 4,253,228, Cl. 29-564.100.
Easter, William M.: *See*—
Cross, Stephen D.; Belk, Wilber C.; Frost, Elmer F., Jr.; and Easter, William M., 4,253,560, Cl. 198-479.000.
Eastman, Gordon E., to Hercules Incorporated. Process of inhibiting precipitation of calcium salts utilizing a copolymer of allyl monomers and maleic anhydride. 4,253,968, Cl. 210-698.000.
Eastman Kodak Company: *See*—
Columbus, Richard L., 4,254,083, Cl. 422-55.000.
Gilkey, Russell; and Wicker, Thomas H., Jr., 4,254,254, Cl. 528-288.000.
Webster, Frank G.; and Regan, Michael T., 4,254,198, Cl. 430-37.000.
Eaton Corporation: *See*—
Migrin, Robert S.; and Brown, James M., 4,254,312, Cl. 200-61.250.
Pahl, James H., 4,253,807, Cl. 418-61.00B.
Worthen, Roger P.; and Walsh, Michael M., 4,253,491, Cl. 137-599.000.
Yip, James K., 4,253,382, Cl. 91-516.000.
Eaton, Melvin H., II. Aspirating dental device. 4,253,831, Cl. 433-91.000.
Ecob, Osmond H.; and Johnson, Bertram, to Wildt Mellor Bromley Limited. Shogging mechanisms. 4,253,316, Cl. 66-14.000.
Edelman, Alfred E. Submerged functional implant and method. 4,253,833, Cl. 433-173.000.
Egawa, Tetsuaki: *See*—
Tawara, Kanzi; Hamazato, Kazuo; Takahashi, Tatsuro; and Egawa, Tetsuaki, 4,254,498, Cl. 370-63.000.
Eggenberger, Markus A.; and Callan, Patrick C., to General Electric Company. Turbine control system for sliding or constant pressure boilers. 4,253,308, Cl. 60-664.000.
Egnell, Eric R., to Nedre Norrlands Producentforening ek. Procedure for manufacture of whey products in continuous production line. 4,253,386, Cl. 99-453.000.
Egorov, Igor N.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.
Ehrlich, Robert L., to Colgate-Palmolive Company. Detergent compositions and washing methods including and utilizing separate tablets of components. 4,253,842, Cl. 8-137.000.
Eichler, Horst. Side propellers for the propulsion of fast boats and aircraft. 4,253,799, Cl. 416-175.000.
Eichman, John J. Dental floss holder. 4,253,477, Cl. 132-91.000.
Eisenberg, Joel H. Ski boot. 4,253,252, Cl. 36-120.000.
Eisenhut, Werner: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.
Eisenstadt, Marvin E., to Cumberland Packing Corp. Dipeptide sweetener compositions. 4,254,154, Cl. 426-548.000.
Eisinger, Magdalena G.; and Hefton, John M., to Sloan Kettering Institute for Cancer Research. Process for growing human epidermal cells in tissue culture. 4,254,226, Cl. 435-240.000.
Elbaum, Charles: *See*—
Cooper, Leon N.; and Elbaum, Charles, 4,254,474, Cl. 364-900.000.
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Houck, David J., 4,253,239, Cl. 33-141.00R.
Elektromanufaktur Zangenstein Hanauer GmbH & Co.: *See*—
Baader, Helmut, 4,254,313, Cl. 200-67.00D.
Elkem-Spigerverket A/S: *See*—
Svendsen, Eivind C. K., 4,254,298, Cl. 13-12.000.
Elliott, Herbert J. Sulphur pelletizing. 4,254,067, Cl. 264-13.000.
Ellmann, Norbert W.: *See*—
Arkans, Edward J.; Annis, Larry D.; and Ellmann, Norbert W., 4,253,449, Cl. 128-24.00R.
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Eltra Corporation: *See*—
Craig, Roderick I., 4,254,468, Cl. 364-523.000.
Elwing, Carl E.; and Elwing, Mary J. Invisible marionette. 4,253,270, Cl. 46-126.000.
Eiwing, Mary J.: *See*—
Elwing, Carl E.; and Elwing, Mary J., 4,253,270, Cl. 46-126.000.
Emerson Electric Co.: *See*—
Daniels, Nicholas R., 4,253,634, Cl. 248-604.000.
Emmons, William D.; Sperry, Peter R.; and Kaplan, Fred A., to Rohm and Haas Company. Method of printing with lithographic ink of reduced volatile solvent content for reducing atmospheric pollution. 4,253,397, Cl. 101-450.100.
Endo Laboratories, Inc.: *See*—
Fliedner, Leonard J., Jr., 4,254,134, Cl. 424-274.000.
Energy Products of Idaho: *See*—
Foote, Jerry B., 4,253,824, Cl. 432-58.000.
Engdahl, Arnold B., Jr., to Federal Paper Board Co., Inc. Bottle carrier. 4,253,564, Cl. 206-183.000.
Engel, Bernd: *See*—
Funk, Hans-Wolfgang; and Engel, Bernd, 4,254,437, Cl. 358-211.000.
Engelstein, Harold, to NB Jackets Company. Photo album for instant photos. 4,253,258, Cl. 40-158.00R.
English, Francis G. S. Actuators. 4,253,493, Cl. 137-625.180.
Enright, Michael F. Percolating water drainage system. 4,253,285, Cl. 52-169.500.
Environmental Sciences Associates, Inc.: *See*—
Matson, Wayne R.; and Vitukevich, Ronald, 4,253,847, Cl. 23-230.00R.
Eppco, Inc.: *See*—
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Erhardt, Peter F.: *See*—
Lu, Chin H.; and Erhardt, Peter F., 4,254,205, Cl. 430-122.000.
Erickson, John W., to Kobe, Inc. High flow check valve apparatus. 4,253,524, Cl. 166-325.000.
Eriksson, Leif; and Liberman, Salomon, to ASEA Aktiebolag. Multiphase undervoltage tripping circuitry for electrical power supply networks. 4,254,444, Cl. 361-82.000.
Esanu, Andre, to Societe d'Etudes de Produits Chimiques. Phenoxy acetic acid derivative, its preparation and therapeutic use. 4,254,162, Cl. 424-275.000.
ESB Inc.: *See*—
Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,253,927, Cl. 204-159.170.
Escher Wyss G.m.b.H.: *See*—
Fritze, Hartwig; Koenemann, Kurt; and Koenemann, Richard, 4,254,150, Cl. 426-18.000.
Essex Chemical Corporation: *See*—
Laauwe, Robert H., 4,253,609, Cl. 239-327.000.
Essex Group, Inc.: *See*—
O'Connor, James A.; Kiefer, Kenneth P.; and Vogel, Ralph A., 4,253,569, Cl. 206-391.000.
O'Connor, James A.; and Kiefer, Kenneth P., 4,253,570, Cl. 206-391.000.
Essilor International (Compagnie Generale d'Optique): *See*—
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Estabrook, James R. Rescue suit. 4,253,198, Cl. 2-82.000.
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Salomon, Georges P. J., 4,253,251, Cl. 36-119.000.
Ethicon, Inc.: *See*—
Komarnycky, Peter, 4,253,563, Cl. 206-63.300.
Ethyl Corporation: *See*—
Shepherd, Lawrence H., Jr., 4,254,037, Cl. 260-345.100.
Shepherd, Lawrence H., Jr., 4,254,038, Cl. 260-345.100.
Eurosil GmbH: *See*—
Azzam, Nadim, 4,254,489, Cl. 368-84.000.
Evans, Albert B., Jr.: *See*—
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Alexander, A. Gordon; and Coupland, Keith, 4,253,979, Cl. 252-33.600.
Long, Robert B., 4,253,937, Cl. 208-8.0LE.
Newman, Neil F.; Roper, Robert; and West, Roger K., 4,254,240, Cl. 525-356.000.
O'Halloran, Rosemary, 4,253,977, Cl. 252-33.400.
Worley, Arthur C.; and Colton, Charles B., 4,253,487, Cl. 137-375.000.
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Fallis, Robert E.: *See*—
Brooks, Mark A.; and Fallis, Robert E., 4,253,827, Cl. 432-253.000.
Fan, Liang-Tseng; and Wen, Chin-Yung, to Kansas State University Research Foundation. Method for wastewater treatment in fluidized bed biological reactors. 4,253,947, Cl. 210-610.000.
Fancy, Thomas A.; Aunio, Vesa I.; and Capitao, John W., to General Electric Company. Turbine start-up switch. 4,254,344, Cl. 307-86.000.
Faria, Sixdeniel; and Chiola, Vincent, to GTE Products Corporation. Solar energy grade cadmium sulfide. 4,254,093, Cl. 423-561.00B.
Farmitalia Carlo Erba S.p.A.: *See*—
Cassinelli, Giuseppe; Arcamone, Federico; and di Marco, Aurelio, 4,254,110, Cl. 424-180.000.
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,254,137, Cl. 424-283.000.
Farrell, Eugene C., Jr. Apparatus for applying a flowable coating material to the interior of a stack. 4,253,813, Cl. 425-90.000.
Farrell, Francis M., III: *See*—
Aho, Kenneth A.; and Farrell, Francis M., III, 4,253,773, Cl. 366-247.000.
Fasano, Pietro. Grain drier. 4,253,825, Cl. 432-149.000.
Fasco Industries, Inc.: *See*—
Gould, Richard E., 4,254,391, Cl. 335-119.000.
Fattler, Karl W. Toy balloon pump. 4,253,659, Cl. 272-52.500.

Fattore, Vittorio: *See*—
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Faustini, Franco: *See*—
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Feder, Joseph: *See*—
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Federal Paper Board Co., Inc.: *See*—
Engdahl, Arnold B., Jr., 4,253,564, Cl. 206-183.000.
Kulig, Francis V., 4,253,602, Cl. 229-31.00R.

Fee, David M., to Caterpillar Tractor Co. Shear seal assembly. 4,253,674, Cl. 277-5.000.

Feichtiger, Dieter; and Hoffmann, Rudiger, to Daimler-Benz Aktiengesellschaft. Pneumatic central locking mechanism for doors and hinged covers in motor vehicles. 4,253,319, Cl. 70-264.000.

Feichtinger, Kurt, to Dr. Johannes Heidenhain GmbH. Measurement apparatus for interrupted surfaces. 4,253,240, Cl. 33-172.00E.

Feliz, Jack M. Self-loading dualistic earth excavator with connecting telescopic conveying and dualistic distribution means. 4,253,256, Cl. 37-104.000.

Ferch, Alois, to Ferch & Nabben. Portable illuminated traffic light. 4,253,415, Cl. 116-63.00P.

Ferch & Nabben: *See*—
Ferch, Alois, 4,253,415, Cl. 116-63.00P.

Ferranti Limited: *See*—
Murray, Robert M. S.; and Pitches, Brian E., 4,254,328, Cl. 235-92.0PE.

Ferris, Michael J.; and Meyer, Burton C., to Marvin Glass & Associates. Game apparatus with object receiving receptacles and object engaging member. 4,253,669, Cl. 273-368.000.

Fessler, William A.: *See*—
Flowers, Ralph G.; and Fessler, William A., 4,254,007, Cl. 260-33.40P.

Feth, George C.; and Wiedmann, Siegfried K., to International Business Machines Corporation. Self-aligned Schottky diode structure and method of fabrication. 4,254,428, Cl. 357-15.000.

Fiat-Allis Macchine Movimento Terra S.p.A.: *See*—
Cecchi, Carlo F.; and Barbagli, Rino O., 4,253,639, Cl. 251-44.000.

Fiat Veicoli Industriali S.p.A.: *See*—
Di Francescantonio, Francesco, 4,253,700, Cl. 296-190.000.

Fiato, Rocco A., to Union Carbide Corporation. Homologation process for the production of ethanol from methanol. 4,253,987, Cl. 252-429.00R.

Fidei, Frank P.; Saviski, Michael; and Jarabak, Andrew J., to Westinghouse Electric Corp. Parallel ring and ring extension support system for dynamoelectric machines. 4,254,352, Cl. 310-71.000.

Fiedler, Martin, to Arrow Pneumatics, Inc. Refrigerated air dryer. 4,253,315, Cl. 62-404.000.

Field, Werner, to United States of America, Army. Loading head. 4,253,375, Cl. 86-1.00R.

Fielding, Geoffrey: *See*—
Perez-Cavero, Leonardo; Cross, Michael W. A.; Fielding, Geoffrey; and Gray, Frederick M., 4,254,403, Cl. 340-310.00R.

Filipetti, David E. T-3.Triple thick triple tip pick. 4,253,372, Cl. 84-322.000.

Filter, Harold E.; and Roberson, Keith, to Dow Chemical Company, The. Process for handling and solidification of radioactive wastes from pressurized water reactors. 4,253,985, Cl. 252-301.10W.

Filterspun, Inc.: *See*—
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Filtrol Corporation: *See*—
Lim, John; and Haney, Ralph M., 4,253,989, Cl. 252-455.00Z.

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Baatz, Gunther; Schafer, Walter; Findeisen, Kurt; and Dahm, Manfred, 4,253,682, Cl. 282-27.500.

Findl, Eugene; and Kurtz, Robert J., to Howmedica Inc. Method for sensing electrical potentials. 4,254,377, Cl. 324-453.000.

Finke, Ulrich; and Moretto, Hans-Heinrich, to Bayer Aktiengesellschaft. Addition of dialkylhalogeno-hydridosilanes to unsaturated hydrocarbon compounds. 4,254,271, Cl. 556-479.000.

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Fischer, Joachim; Brandl, Siegfried; and Bartoszek, Rudolf, to Philipp Holzmann Aktiengesellschaft. Method and an apparatus for providing a grouted anchorage against hydrostatic pressure. 4,253,781, Cl. 405-260.000.

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Schmoock, Roy F., 4,253,340, Cl. 73-861.120.

Fischer, Robert T.; and Shaver, William R., to Miner Enterprises, Inc. Railway hopper car sliding gate closing mechanism. 4,253,400, Cl. 105-282.00P.

Fisher, Alan J. Digital code reader. 4,254,441, Cl. 360-88.000.

Fisher, C. Donald, to Koppers Company, Inc. Apparatus for separating an entrained solid from a gas. 4,253,857, Cl. 55-400.000.

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Fisher, Robert D., to Memorex Corporation. Disc having substrate, intermediate layer and magnetically sensitive layer wherein intermediate layer has melting point less than annealing temperature of substrate but higher than processing temperature of magnetically sensitive layer. 4,254,189, Cl. 428-626.000.

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Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,254,027, Cl. 260-207.000.

Fitz, Forest G., Jr.: *See*—
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,254,164, Cl. 427-142.000.

Flanders, Dale C.; Smith, Henry I.; and DaLomba, Muriel A., to Massachusetts Institute of Technology. Supported membrane composite structure and its method of manufacture. 4,254,174, Cl. 428-209.000.

Fleenor, Clifton T., Jr., to Borg-Warner Corporation. Flame retardant polyolefins. 4,253,972, Cl. 252-8.100.

Fleischer, Henry. Folding juvenile chair attachable to a table top. 4,253,658, Cl. 272-33.00R.

Fletcher, Augustus; and Moriarty, William L., to American Chemical & Refining Company, Incorporated. Composition and method for gold plating. 4,253,920, Cl. 204-43.00G.

Fleury, Daniel: *See*—
Lecomte, Claude; and Fleury, Daniel, 4,253,780, Cl. 405-202.000.

Flexible Design Packaging Machine Company: *See*—
D'Angelo, Joseph J.; and Maccherone, Lawrence S., 4,253,892, Cl. 156-84.000.

Fliedner, Leonard J., Jr., to Endo Laboratories, Inc. Antidepressant 2-amino- and -2-(substituted amino)-cis-hexahydro-carbazoles. 4,254,134, Cl. 424-274.000.

Flint, John R.; Rabindran, Karavattuveetil G.; and Clevenger, Jerry W., to Bell & Howell Company. Lamp regulator circuit for rotary camera. 4,254,364, Cl. 315-311.000.

Flo-Tork Inc.: *See*—
D'Amato, Michael A., 4,253,806, Cl. 418-61.00R.

Floeter, Larry A.; Derber, Howard J.; and Hatch, Edwin B., to Brunswick Corporation. Control unit for marine engines employing neutral lock mechanism. 4,253,349, Cl. 74-878.000.

Flowers, Ralph G.; and Fessler, William A., to General Electric Company. Electrical insulating composition. 4,254,007, Cl. 260-33.40P.

Flowers, Ralph G.; Nichols, Frank S.; and Anderson, Robert P., to General Electric Company. Method of preparing electrostatic coating compositions containing an epoxy resin. 4,254,071, Cl. 264-102.000.

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Flowtron Industries, Inc.: *See*—
Sabatino, Daniel D.; and Wilkens, Henry W., 4,253,332, Cl. 73-224.000.

Floyd, Middleton B., Jr., to American Cyanamid Company. 1-Descarboxy-1-ketoester (ketoacid)-prostaglandins. 4,254,275, Cl. 560-53.000.

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Baum, Jonathan S., 4,254,050, Cl. 260-465.00D.
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Cross, Stephen D.; Belk, Wilber C.; Frost, Elmer F., Jr.; and Easter, William M., 4,253,560, Cl. 198-479.000.
Hatch, Charles E., III, 4,254,279, Cl. 560-178.000.
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,254,282, Cl. 562-506.000.

Foerst, Reiner, to Dr.-Ing. Reiner Foerst GmbH. Tuning device for musical instruments. 4,253,373, Cl. 84-454.000.

Fogelberg, Bengt I., to Aktiebolaget Atomenergi. Feeding device. 4,253,914, Cl. 176-87.000.

Fonseca, Anthony G.; Bray, Bruce G.; and Kosky, Randolph, to Conoco, Inc. Method for mining coal using ammonia and nitrifying bacteria. 4,253,703, Cl. 299-5.000.

Fontana, John D.; and Fontana, Louis R. Method for making decorative inlaid concrete blocks. 4,254,077, Cl. 264-225.000.

Fontana, Louis R.: *See*—
Fontana, John D.; and Fontana, Louis R., 4,254,077, Cl. 264-225.000.

Fontlladosa, Enrique B. Display unit for confectioneries. 4,253,561, Cl. 206-44.00R.

Foote, Jerry B., to Energy Products of Idaho. Tramp removal and bed recirculation system. 4,253,824, Cl. 432-58.000.

Ford, Allan L.; and Cole, William A., to Reborn Products Co., Inc. Belt fixture and method of using same. 4,253,576, Cl. 211-60.00R.

Ford Motor Company: *See*—
Robertson, Richard E., 4,254,006, Cl. 260-31.80M.
Washburn, William J.; LaFever, Clifford E.; and Thompson, Hugh B., 4,253,376, Cl. 89-33.0BB.

Forester, Glen R.; and Bernard, Arnold M. Escape device. 4,253,643, Cl. 182-239.000.

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Huntzinger, Guy A. L., 4,254,078, Cl. 264-320.000.

Forsberg, John W., to Lubrizol Corporation, The. Magnesium oxide-carboxylate complexes, method for their preparation, and compositions containing the same. 4,253,976, Cl. 252-33.000.

Foss, Robert P.; and Jacobson, Henning W., to Du Pont de Nemours, E. I., and Company. Hydrocarbon/ethylene oxide random graft copolymers. 4,254,238, Cl. 525-335.000.

Foster Wheeler Energy Corporation: *See*—
Gamble, Robert L.; and Garcia-Mallol, Juan A., 4,253,425, Cl. 122-4.00D.

Fowler, Raymond L.; and Schneider, Timothy L., to International Business Machines Corporation. Facsimile mid-page restart. 4,254,439, Cl. 358-265.000.

Fox, Roy W., Jr., to Middleburg Corporation. Insulation pierce-type connector for ribbon cable. 4,253,722, Cl. 339-99.00R.

Fox, Susan M.; and Gibson, David V., to Dulux Australia Ltd. Aqueous polymer dispersion. 4,254,003, Cl. 260-29.6NR.

Fram, Jerry R. Roving cutter with positive ejection cutting head. 4,253,363, Cl. 83-114.000.

Franck, Jean-Pierre: *See*—
Juguin, Bernard; Franck, Jean-Pierre; Le Page, Jean-Francois; and de Gaudemaris, Gabriel, 4,254,294, Cl. 585-525.000.

Frank, Ronald R. Dropped floor motor home construction. 4,253,699, Cl. 296-25.000.

Franken, Walter; Nussbaumer, Dieter; Perl, Horst; and Weickhardt, Ludwig, to Sartorius GmbH. Asymmetrical ultrafiltration membrane on the basis of cellulose triacetate. 4,253,963, Cl. 210-500.200.

Franklin, Robert L.; and Steiner, Robert S. Fishing lure. 4,253,263, Cl. 43-42.240.

Franz, Helmut; Duffer, Paul F.; and Hanlon, James H., to PPG Industries, Inc. Method for making dimethyltin difluoride. 4,254,046, Cl. 260-429.700.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,253,398, Cl. 104-2.000.

Frazier, Calvin H. Arthroscopic probe. 4,253,467, Cl. 128-630.000.

Freidinger, Roger M.: *See*—
Veber, Daniel F.; and Freidinger, Roger M., 4,254,107, Cl. 424-177.000.

French, William S., to Standard Oil Company (Indiana). Frequency independent directionally sensitive array in seismic surveying. 4,254,480, Cl. 367-58.000.

Frenken, Petrus M. G.; and Scholten, Joseph J. F., to Stamicarbon, B.V. Process for the conversion of dimethyl ether. 4,254,297, Cl. 585-640.000.

Friedericy, Johan A.; Mueller, Gary F.; and Lohay, James R., to Garrett Corporation, The. Heat exchanger construction. 4,253,520, Cl. 165-166.000.

Friedman, Emil M.; and Bauer, Richard G., to Goodyear Tire & Rubber Company, The. Green strength of elastomer blends. 4,254,013, Cl. 260-42.470.

Friedman, Harvey S.; and Rubinstein, Leon, to Polaroid Corporation. Spread roller assembly. 4,253,757, Cl. 354-304.000.

Friedman, Maurice W.: *See*—
Vulcano, Vincent N.; and Friedman, Maurice W., 4,253,290, Cl. 53-256.000.

Friedrich, Larry: *See*—
Carson, William S., III; Carson, Louis A.; Carson, Christopher E.; and Friedrich, Larry, 4,254,179, Cl. 428-311.000.

Friedrichs, Konrad: *See*—
Hinzpeter, Jurgen; Schmidt, Ingo; and Friedrichs, Konrad, 4,253,811, Cl. 425-149.000.

Friends, Gary D.; and VanBuren, Martin F., to Bausch & Lomb Incorporated. Contact lens made from polymers of polysiloxane and polycyclic esters of acrylic acid or methacrylic acid. 4,254,248, Cl. 526-279.000.

Frishauf, Stephen H.: *See*—
Herr, Marianne; and Frishauf, Stephen H., 4,254,341, Cl. 250-519.000.

Fritze, Hartwig; Koenemann, Kurt; and Koenemann, Richard, to Escher Wyss G.m.b.H. Process for producing a foodstuff of cereal. 4,254,150, Cl. 426-18.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, 4,254,132, Cl. 424-269.000.

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Frost, Elmer F., Jr.: *See*—
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Fuelles, Helmwart: *See*—
Hall, Donivan L.; and Fuelles, Helmwart, 4,253,534, Cl. 177-241.000.

Fuelmaster Produktie Maatschappij B.V.: *See*—
Wormmeester, Johan G.; and Baranyai, Gyula I., 4,253,803, Cl. 417-283.000.

Fuji Photo Film Co., Ltd.: *See*—
Aonuma, Masashi; and Tamai, Yasuo, 4,253,886, Cl. 148-105.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,254,195, Cl. 430-17.000.
Okishi, Yoshio, 4,253,999, Cl. 260-17.00R.
Takeda, Keizi; Matsumoto, Kenji; and Nagata, Masayoshi, 4,254,214, Cl. 430-415.000.
Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, 4,254,208, Cl. 430-215.000.
Yagihara, Morio; Yokota, Yukio; Ogawa, Akira; and Sawaguchi, Hiroshi, 4,254,212, Cl. 430-381.000.

Fujii, Akira: *See*—
Sekida, Minoru; Fujii, Akira; Kobori, Toshio; and Teramoto, Tougo, 4,253,755, Cl. 354-242.000.

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Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.

Fujioka, Keiji: *See*—
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Fujisawa, Fumio: *See*—
Segawa, Yorihide; Fujisawa, Fumio; and Shiohata, Koki, 4,253,800, Cl. 416-203.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,117, Cl. 424-246.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,260, Cl. 544-27.000.

Fujita, Kinya. Training appliance for tooth brushing. 4,253,212, Cl. 15-167.00R.

Fujitsu Limited: *See*—
Murano, Hatsuo; and Yamamuro, Yoshio, 4,254,401, Cl. 340-147.00C.

Fukuda, Hidenori, to Lion Dentifrice Co., Ltd., The. Multiple emulsion having a form of water/oil/water phase and process for preparation thereof, and multiple emulsion type cosmetics. 4,254,105, Cl. 424-170.000.

Fukui, Jun: *See*—
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, 4,253,341, Cl. 73-861.770.

Fukumoto, Masaru: *See*—
Maeda, Kenji; Iwanami, Yoshiyuki; and Fukumoto, Masaru, 4,253,645, Cl. 266-211.000.

Fukuzuka, Toshio; Urai, Masaaki; and Wakayama, Kenji, to Kobe Steel, Limited. Process for one-side hot-dip coating. 4,254,158, Cl. 427-8.000.

Fulghum, Donald P.; and Pate, Jerry W., to E-Systems, Inc. Signal processor for use with a telephone system and a digital transmission line. 4,254,304, Cl. 179-2.0DP.

Fullerton, W. Wardle, to Merck & Co., Inc. Process for recording data in the leucocyte migration inhibition assay. 4,254,219, Cl. 435-7.000.

Fulmer, Glenn E., to W. R. Grace & Co. Fire-retardant product and method of making. 4,254,177, Cl. 428-256.000.

Fumagalli, Angelo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,254,137, Cl. 424-283.000.

Funderburk, Tim; and McLaughlin, Donald W., to GTE Automatic Electric Laboratories, Inc. Multiport conference circuit with voice level coding. 4,254,497, Cl. 370-62.000.

Funk, David B., to Dickey-john Corporation. Optical grain analysis instrument. 4,253,766, Cl. 356-418.000.

Funk, Hans-Wolfgang; and Engel, Bernd, to Proxitronic Funk GmbH & Co. KG. Image intensifier attachment for attachment to the front lens of a television camera. 4,254,437, Cl. 358-211.000.

G., Enrique B.: *See*—
Anderson, Rogers H.; G., Enrique B.; and Chen, Di, 4,253,731, Cl. 350-96.340.

Gaeddert, Melvin V.: *See*—
Schmitt, Raymond F.; Gaeddert, Melvin V.; and McWhirt, Bobby D., 4,253,387, Cl. 100-5.000.

Galdun, Daniel J.; Grudowski, Raymond A.; and Grants, Valdis, to Allen-Bradley Company. Rack adapter for serially connected I/O interface racks. 4,254,473, Cl. 364-900.000.

Galli, Ercole, to Mondial Piston Dr. Galli Ercole & C.S.p.A. Piston for internal combustion engines. 4,253,429, Cl. 123-41.350.

Gamble, Robert L.; and Garcia-Mallol, Juan A., to Foster Wheeler Energy Corporation. Internal dust recirculation system for a fluidized bed heat exchanger. 4,253,425, Cl. 122-4.00D.

Gambro AB: *See*—
Hakansson, Hakan B.; and Persson, Lennart P. E., 4,253,334, Cl. 73-362.0AR.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., to Farmitalia Carlo Erba S.p.A. Bicyclic prostaglandins and process for their preparation. 4,254,137, Cl. 424-283.000.

Ganter, Wolfgang, to Gebruder Junghans GmbH. Electronic clock having synchronized analog and digital displays. 4,254,490, Cl. 368-29.000.

Garcia-Mallol, Juan A.: *See*—
Gamble, Robert L.; and Garcia-Mallol, Juan A., 4,253,425, Cl. 122-4.00D.

Gardner, Francis D. Animal trap. 4,253,265, Cl. 43-92.000.

Garlinghouse, Roland E. Control system for material placement buckets. 4,253,692, Cl. 294-71.000.

Garmont S.p.A.: *See*—
Marzocchi, Lorenzo, 4,253,217, Cl. 24-69.0SK.

Garner, Peter: *See*—
Logan, Maurus C.; Cole, John M.; and Garner, Peter, 4,253,730, Cl. 350-96.210.

Garrett Corporation, The: *See*—
Friedericy, Johan A.; Mueller, Gary F.; and Lohay, James R., 4,253,520, Cl. 165-166.000.

Garter, Robert F.; and Hamparian, Nshan, to General Motors Corporation. Insulated oil cooled piston assembly. 4,253,430, Cl. 123-41.380.

Gates, Allen P.; and Saunderson, Allan, to Vickers Limited. Light-sensitive materials. 4,254,244, Cl. 525-502.000.

Gates Rubber Company, The: *See*—
Clinefelter, Richard L.; and Bradford, Larry R., 4,253,893, Cl. 156-112.000.

Gaudig, Jay R.: *See*—
Beno, Lawrence A.; Harrell, John T.; Evans, Albert B., Jr.; and Gaudig, Jay R., 4,254,327, Cl. 235-92.0CC.

Gault, Roger T.: *See*—
Bernauer, Lawrence J.; and Gault, Roger T., 4,254,064, Cl. 261-64.00E.

Gaumann, Andreas, to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule. Apparatus for the

separation of mixtures of particulate solids of different density. 4,253,942, Cl. 209-17.000.
Gauthier, Jean A.; and Jirkovsky, Ivo L., to Ayerst, McKenna & Harrison Inc. 1-Oxo-5H-pyrimido[2,1-c][1,4]benzthiazine-2-carboxylic acid esters. 4,254,118, Cl. 424-246.000.
Gauthier, Jean A.; and Jirkovsky, Ivo L., to Ayerst, McKenna & Harrison Inc. 3-Oxo-5H-pyrimido[2,1-c][1,4]benzoxazines. 4,254,121, Cl. 424-248.550.
Gay, Walter A.; and Twohig, Elizabeth A., to Olin Corporation. Selected 5-trichloromethylthioamino derivatives of 3-trihalomethyl-1,2,4-thiadiazole and their use as fungicides. 4,254,265, Cl. 548-128.000.
Gebruder Junghans GmbH: *See*—
Ganter, Wolfgang, 4,254,490, Cl. 368-29.000.
Geczy, Bela, to Smith International, Inc. In-hole motor drill with locking bit clutch. 4,253,532, Cl. 175-107.000.
Gemmill, Robert M., Jr.; and Horodysky, Andrew G., to Mobil Oil Corporation. Phosphorus-containing compounds and lubricants containing same. 4,253,978, Cl. 252-32.70E.
Gemmill, Robert M., Jr.: *See*—
Horodysky, Andrew G.; and Gemmill, Robert M., Jr., 4,253,973, Cl. 252-46.700.
General Cable Corporation: *See*—
Brorein, William J., 4,253,890, Cl. 156-55.000.
General Electric Company: *See*—
Chambers, Gregory R.; and Smith, William E., 4,254,290, Cl. 568-866.000.
Claybaker, LeRoy A., 4,254,187, Cl. 428-498.000.
Eggenberger, Markus A.; and Callan, Patrick C., 4,253,308, Cl. 60-664.000.
Fancy, Thomas A.; Aunio, Vesa I.; and Capitao, John W., 4,254,344, Cl. 307-86.000.
Flowers, Ralph G.; and Fessler, William A., 4,254,007, Cl. 260-33.40P.
Flowers, Ralph G.; Nichols, Frank S.; and Anderson, Robert P., 4,254,071, Cl. 264-102.000.
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Graff, William A.; and Shelley, Robert D., 4,253,861, Cl. 65-30.00E.
Grindle, James L.; and Hogue, Marcus P., 4,254,456, Cl. 362-300.000.
Hay, Allan S., 4,254,252, Cl. 528-205.000.
Karikas, John J., 4,253,591, Cl. 222-636.000.
Karikas, John J., 4,254,356, Cl. 313-217.000.
Lovrekovic, Steven N.; and Bowers, Harry J., Jr., 4,253,233, Cl. 29-857.000.
Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., 4,254,183, Cl. 428-213.000.
Snyder, Paul V., 4,254,325, Cl. 219-413.000.
Taylor, William L., 4,254,355, Cl. 313-25.000.
Vogt, Robert L., 4,253,301, Cl. 60-39.46P.
White, James A.; and Rice, Frank L., 4,254,450, Cl. 362-92.000.
Willyoung, David M., 4,253,300, Cl. 60-39.18B.
Wolfe, Allen R., 4,254,383, Cl. 333-161.000.
General Electric Company Limited, The: *See*—
Perez-Cavero, Leonardo; Cross, Michael W. A.; Fielding, Geoffrey; and Gray, Frederick M., 4,254,403, Cl. 340-310.00R.
General Foods Corporation: *See*—
Rudolph, Marvin J.; and Hynson, Richard B., 4,254,149, Cl. 426-5.000.
General Instrument Corporation: *See*—
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,254,453, Cl. 362-240.000.
General Motors Corporation: *See*—
Barnett, Ronald R., 4,253,681, Cl. 280-804.000.
Berg, Morris; Hawes, Slater W.; Kennard, Frederick L., III; and Kikuchi, Paul C., 4,253,934, Cl. 204-195.00S.
Bungo, Edward M., 4,253,718, Cl. 339-59.00R.
Campbell, Gerald J.; and Fiordellisi, Stephen J., 4,253,277, Cl. 49-352.000.
Dewar, Robert, Jr.; and Iadipaolo, Rene M., 4,254,433, Cl. 358-105.000.
Garter, Robert F.; and Hamparian, Nshan, 4,253,430, Cl. 123-41.380.
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.
Keem, John E., 4,254,354, Cl. 310-329.000.
Kerschner, William J., III, 4,254,408, Cl. 340-366.00B.
Moore, Chester A., Jr., 4,254,372, Cl. 323-277.000.
Smith, Stanley E., 4,253,413, Cl. 112-262.300.
Steger, Charles B.; and Reid, Kenneth H., 4,253,623, Cl. 242-107.40A.
Wilson, John R., Jr.; and Pierce, Earl W., 4,254,085, Cl. 422-171.000.
Georg Schlegel, Firma: *See*—
Schlegel, Eberhard, 4,254,317, Cl. 200-314.000.
Georgia Tech Research Institute: *See*—
Cochran, Joe K., Jr.; Lee, Jae-Do; and Chapman, Alan T., 4,253,221, Cl. 29-25.180.
Gerard, Melvin J., Sr. Adjustable spray rack. 4,253,607, Cl. 239-185.000.
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Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,253,879, Cl. 106-165.000.
Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule: *See*—
Gaumann, Andreas, 4,253,942, Cl. 209-17.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Kerklies, Bodo, 4,253,344, Cl. 474-96.000.
Giardina, Angelo R., to Westinghouse Electric Corp. Modular heat exchanger. 4,253,516, Cl. 165-78.000.
Gibbs, Peter E. Spring loaded ascender. 4,253,218, Cl. 24-134.00R.
Gibson, David V.: *See*—
Fox, Susan M.; and Gibson, David V., 4,254,003, Cl. 260-29.6NR.
Giertz, Hans-Josef: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.
Gikas, Giorgos X., to Gillette Company, The. Photo-integrated densitometer. 4,253,767, Cl. 356-426.000.
Gilkey, Russell; and Wicker, Thomas H., Jr., to Eastman Kodak Company. Polyester amide fabric adhesives. 4,254,254, Cl. 528-288.000.
Gill, Courtland P. Sound-producing device. 4,253,254, Cl. 36-139.000.
Gilleland, Randall C.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,254,320, Cl. 219-69.00C.
Gillette Company, The: *See*—
Gikas, Giorgos X., 4,253,767, Cl. 356-426.000.
Jacobson, Chester F., 4,253,235, Cl. 30-47.000.
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Gilmore Valve Company: *See*—
Sarlls, Edward C., Jr., 4,253,481, Cl. 137-112.000.
Gish, Leonard W. Safety device for cable climbers, hoists and winches. 4,253,693, Cl. 294-86.0CG.
Gittos, Maurice W.; and Letertre, Gerard J., to Merrell Toraude et Compagnie. Process for preparing 4-aminohex-5-ynoic acid. 4,254,284, Cl. 562-574.000.
Gladwin, Inc.: *See*—
Blomeyer, Earle B.; Watson, William Q.; and Richardson, Charles T., Jr., 4,254,308, Cl. 179-148.00R.
Gladwin, Keith, to Coalite Group Limited. Catalytic dehydrogenation. 4,254,288, Cl. 568-652.000.
Glaenzer Spicer: *See*—
Orain, Michel A., 4,253,776, Cl. 403-337.000.
Glanville, James O.; and Walters, Gene R., to Wen-Don Corporation. Composition for reducing the strength of ice. 4,254,166, Cl. 427-212.000.
Glass, James E.: *See*—
Hibbitts, Charles H.; Price, Byron F.; Cogbill, Everett C.; Kelly, James G.; and Glass, James E., 4,253,474, Cl. 131-140.00P.
Glikin, Paul E., to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,253,802, Cl. 417-199.00A.
Glockner, Hermann: *See*—
Munnich, Hermann; and Glockner, Hermann, 4,253,326, Cl. 73-10.000.
Glover, Brian: *See*—
Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,254,027, Cl. 260-207.000.
Glowaky, Raymond C.; Kurowsky, Steven R.; and Sysko, Robert J., to Pfizer Inc. Amine polymers having dewatering activity. 4,254,250, Cl. 525-350.000.
Godar, Richard L.; Hendricks, Carl C.; and Roux, Kenneth R., to Petrolite Corporation. Corrosion inhibitors. 4,253,876, Cl. 106-14.420.
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; and Terry, Angel F., to News Log International Incorporated. Microfiche information retrieval and control system utilizing machine readable microfiche and visually readable microfiche. 4,254,329, Cl. 235-379.000.
Gold, Jeffrey E. Propagating the pineapple plant. 4,253,274, Cl. 47-58.000.
Gold, Philip S.: *See*—
Davis, Jack R.; and Gold, Philip S., 4,254,467, Cl. 364-521.000.
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., to General Motors Corporation. Electrode sputtering process for exhaust gas oxygen sensor. 4,253,931, Cl. 204-192.0SP.
Goldammer, Arthur R., to Pocket-Pak, Inc. Cassette container. 4,253,567, Cl. 206-387.000.
Goode, Steven G.: *See*—
Albright, John M.; and Goode, Steven G., 4,253,680, Cl. 280-479.00R.
Goodman, Lee, to Dresser Industries, Inc. High temperature sealing system for a rotary rock bit. 4,253,710, Cl. 308-8.200.
Goodyear Tire & Rubber Company, The: *See*—
Brent, James W., Jr.; and Shelley, Lawrence E., 4,254,253, Cl. 528-272.000.
Chung, Daniel A.; and Lawrence, John P., 4,254,272, Cl. 560-19.000.
Curtiss, Walter W., Jr., 4,253,511, Cl. 152-330.0RF.
Friedman, Emil M.; and Bauer, Richard G., 4,254,013, Cl. 260-42.470.
Keck, Max H., 4,254,243, Cl. 525-444.000.
Kline, Richard H., 4,254,020, Cl. 260-45.85H.
Larson, William M; Pearson, Charles J.; and Rogers, Thomas H., 4,253,513, Cl. 152-354.00R.
Tung, William C. T., 4,254,001, Cl. 260-22.00D.
Goossens, Walter; and Schrank, Wolfgang, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Pressure rod for a coke discharge apparatus. 4,253,915, Cl. 202-262.000.

Goshima, Norio: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,254,398, Cl. 340-58.000.

Goto, Kanji; Yamaguti, Tiyomi; Mikami, Yorihito; and Komakine, Rokuro, to Nippon Steel Corporation. Hot blast-furnace-lining repairing apparatus. 4,253,646, Cl. 266-281.000.

Goto, Kiyoshi, to Toyo Ink Manufacturing Co., Ltd. Ultraviolet light curable coating compositions. 4,254,234, Cl. 525-153.000.

Goto, Toshiki: *See*—
Sato, Hideo; Shimamune, Takayuki; Goto, Toshiki; and Nitta, Hideo, 4,253,933, Cl. 204-293.000.

Gould Inc.: *See*—
Kozacka, Frederick J.; and Belcher, Richard A., 4,254,394, Cl. 337-231.000.

Gould, Richard E., to Fasco Industries, Inc. Split armature relay. 4,254,391, Cl. 335-119.000.

Grabmaier, Christa: *See*—
Thomann, Helmut; and Grabmaier, Christa, 4,254,200, Cl. 430-84.000.

Grady, Clyde C.; and Grady, Clyde C., II. Concrete molding machine. 4,253,636, Cl. 249-139.000.

Grady, Clyde C., II: *See*—
Grady, Clyde C.; and Grady, Clyde C., II, 4,253,636, Cl. 249-139.000.

Graf, Walter: *See*—
Schwab, Dittmar; Bartels, Hermann; and Graf, Walter, 4,253,320, Cl. 70-276.000.

Graff, William A.; and Shelley, Robert D., to General Electric Company. Method of copper staining a glass article. 4,253,861, Cl. 65-30.00E.

Graham, Joseph A., Jr.; and Hibbs, Clair R., to Hibbs, Clair M.; Wilburn, Kenneth R.; and Mekus, Max. A., part interest to each. Composition for prophylactic treatment of pinkeye. 4,254,098, Cl. 424-14.000.

Grants, Valdis: *See*—
Galdun, Daniel J.; Grudowski, Raymond A.; and Grants, Valdis, 4,254,473, Cl. 364-900.000.

Grass Valley Group, Inc., The: *See*—
Dayton, Birney D.; Rorden, William L.; and Stanger, Leon J., 4,254,435, Cl. 358-155.000.

Gray, Bruce A. A.: *See*—
Bennett, Brian S.; Gray, Bruce A. A.; and Todd, Michael A., 4,253,232, Cl. 29-623.100.

Gray, Frederick M.: *See*—
Perez-Cavero, Leonardo; Cross, Michael W. A.; Fielding, Geoffrey; and Gray, Frederick M., 4,254,403, Cl. 340-310.00R.

Greaser, Randy: *See*—
Campbell, Willis R.; Greaser, Randy; and Clevenger, James T., Jr., 4,253,389, Cl. 100-5.000.

Grebb, Don. Weed screen and trash eliminator. 4,253,952, Cl. 210-159.000.

Green, George E., to Ciba-Geigy Corporation. Reinforced composites containing cyanato resins. 4,254,012, Cl. 260-42.180.

Greene, Richard F.: *See*—
Haas, George A.; Thomas, Richard E.; and Greene, Richard F., 4,254,357, Cl. 313-268.000.

Greiner, Ulrich, to Pfaff Haushaltmaschinen GmbH. Sewing machine console having a lowering device. 4,253,715, Cl. 312-21.000.

Gresen Manufacturing Company: *See*—
Stephens, William T., 4,253,482, Cl. 137-117.000.

Grey, Roger A.; and Pez, Guido P., to Allied Chemical Corporation. Process for hydrogenation of nitriles. 4,254,059, Cl. 464-492.000.

Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. Treatment of pain, fever, and inflammation with compositions containing 2-(substitutedpiperidinomethyl)propane and propene nitriles. 4,254,131, Cl. 424-267.000.

Griffis, Patrick D., to RCA Corporation. Integrated circuit heat dissipator. 4,254,447, Cl. 361-386.000.

Griffith, Ernest S.; and Davis, William W., to Sperry Corporation. High impedance, Manchester (3 state) to TTL (2 wire, 2 state) transceiver for tapped bus transmission systems. 4,254,501, Cl. 375-9.000.

Griffith, Phillip A., to Santa Barbara Avionics, Inc. Inverter systems. 4,254,458, Cl. 363-13.000.

Grindle, James L.; and Hogue, Marcus P., to General Electric Company. Luminaire for assembly line. 4,254,456, Cl. 362-300.000.

Grinstead, Robert R., to Dow Chemical Company, The. Extraction of copper, nickel and cobalt using alkylaromatic sulfonic acids and chelating amines. 4,254,087, Cl. 423-24.000.

Grogler, Gerhard: *See*—
Schwindt, Jurgen; Grogler, Gerhard; and Uhrhan, Paul, 4,254,229, Cl. 521-163.000.

Grognu, Paul D., to Companie Maritime d'Expertises S.A. Method for aligning two submerged pipe sections. 4,253,779, Cl. 405-169.000.

Gross, Moshe: *See*—
Kaspi, Joseph; Gross, Moshe; and Nussim, Menasse, 4,254,029, Cl. 260-239.100.

Gross, Stephen E., to Johns-Manville Corporation. Preparation method for catalyst supports and materials produced thereby. 4,253,990, Cl. 252-455.00R.

Grudowski, Raymond A.: *See*—
Galdun, Daniel J.; Grudowski, Raymond A.; and Grants, Valdis, 4,254,473, Cl. 364-900.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
Funderburk, Tim; and McLaughlin, Donald W., 4,254,497, Cl. 370-62.000.

GTE Products Corporation: *See*—
Faria, Sixdeniel; and Chiola, Vincent, 4,254,093, Cl. 423-561.00B.

Guercio, Salvatore P., to Universal Packaging Machinery Sales Corp. Carbonated beverage bottling apparatus. 4,253,502, Cl. 141-47.000.

Guice, Ronald H. Carrier/saddle structure for stringed musical instruments. 4,253,371, Cl. 84-267.000.

Guidetti, Giampiero: *See*—
Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, 4,254,030, Cl. 260-543.00F.

Guillien, Michel Y., to Motorola, Inc. Bridge amplifier. 4,254,380, Cl. 330-275.000.

Gunn, Kenneth M., to Texaco Inc. Manifold fuel vapor withdrawal system. 4,253,503, Cl. 141-59.000.

Haas, George A.; Thomas, Richard E.; and Greene, Richard F., to United States of America, Navy. Multi-arrayed micro-patch emitter with integral control grid. 4,254,357, Cl. 313-268.000.

Haga, Hiroyo: *See*—
Takamatsu, Toshio; Haga, Hiroyo; Aoki, Kazuo; and Sato, Takeshi, 4,254,323, Cl. 219-110.000.

Hakamada, Isao: *See*—
Kawamura, Naoto; Masegi, Koichi; and Hakamada, Isao, 4,253,735, Cl. 350-409.000.

Hakansson, Hakan B.; and Persson, Lennart P. E., to Gambro AB. Device for gripping and for reading of temperature values obtained by means of a temperature measuring device. 4,253,334, Cl. 73-362.0AR.

Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., to Caterpillar Tractor Co. Vehicle steering brake and clutch control. 4,253,555, Cl. 192-13.00R.

Hakoyama, Atsumu: *See*—
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.

Halbich, Frank. Plastic pillbox. 4,253,572, Cl. 206-538.000.

Hall, Dale E.; and Clark, William D. K., to International Nickel Company, Inc., The. Electrodeposition of cadmium-selenium semiconducting photoelectrodes from an acid citrate bath. 4,253,919, Cl. 204-37.00R.

Hall, Donivan L.; and Fuelles, Helmwart, to Reliance Electric Company. Splash-resistant scale. 4,253,534, Cl. 177-241.000.

Hallen Company: *See*—
Allen, Herbert, 4,253,351, Cl. 81-3.38A.

Hallenbeck, Emerson J. Expandable purge unit. 4,254,321, Cl. 219-72.000.

Halliburton Company: *See*—
Baker, Eugene E.; and Streich, Steven, 4,253,676, Cl. 277-34.600.
Savage, Ronald E., 4,253,521, Cl. 166-123.000.

Hamamoto, Nobuo: *See*—
Ido, Satoshi; Hamamoto, Nobuo; and Ichino, Kazuo, 4,254,368, Cl. 318-603.000.

Hamashima, Yoshio; and Nagata, Wataru, to Shionogi & Co., Ltd. 3-Unsubstituted-3-cephem compounds. 4,254,119, Cl. 424-246.000.

Hamazato, Kazuo: *See*—
Tawara, Kanzi; Hamazato, Kazuo; Takahashi, Tatsuro; and Egawa, Tetsuaki, 4,254,498, Cl. 370-63.000.

Hamby, Michael V.: *See*—
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,254,453, Cl. 362-240.000.

Hammann, Ingeborg: *See*—
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,254,113, Cl. 424-200.000.

Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, to Hoechst Aktiengesellschaft. Shaped article comprising a permanently plasticized cellulose hydrate composition and preparation thereof. 4,253,879, Cl. 106-165.000.

Hammond, Kenneth G.; and Chafetz, Harry, to Texaco Inc. Quaternary ammonium salt of ester-lactone and hydrocarbon oil containing same. 4,253,980, Cl. 252-34.000.

Hamparian, Nshan: *See*—
Garter, Robert F.; and Hamparian, Nshan, 4,253,430, Cl. 123-41.380.

Hanakata, Takayoshi; and Anzai, Shiro, to Canon Kabushiki Kaisha. Information output device. 4,253,774, Cl. 400-87.000.

Hancock, William L.; Kitchen, John P.; and Mizelle, Ned W., to Hoover Universal, Inc. Box spring assembly with basic wire grid. 4,253,208, Cl. 5-247.000.

Haney, Ralph M.: *See*—
Lim, John; and Haney, Ralph M., 4,253,989, Cl. 252-455.00Z.

Hanifin, John W., Jr.; and Ridge, David N., to American Cyanamid Company. Substituted phenyl-2-cyano-2-thioalkenoic acid esters. 4,254,047, Cl. 260-455.00R.

Hanifin, John W., Jr.; and Ridge, David N., to American Cyanamid Company. Substituted phenyl alkylidene acetoacetonitriles. 4,254,048, Cl. 260-465.00F.

Hanifin, John W., Jr.; and Ridge, David N., to American Cyanamid Company. Substituted phenyl-2-cyano-2-alkenoic acid esters. 4,254,049, Cl. 260-465.00D.

Hanlon, James H.: *See*—
Franz, Helmut; Duffer, Paul F.; and Hanlon, James H., 4,254,046, Cl. 260-429.700.

Hannan, Harry, Jr., to Citrus Central, Inc. Processing of grapefruit segments containing membranes. 4,254,157, Cl. 426-616.000.

Hansel, William B., to Sun Petroleum Products Company. Vortex eliminator. 4,253,490, Cl. 137-590.000.

Hansson, Kaj: *See*—
Abrahamsson, Thore; and Hansson, Kaj, 4,253,309, Cl. 62-2.000.

Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Stabilization of organic substrate materials including photographic dye images against the action of light. 4,254,195, Cl. 430-17.000.

Haramoto, Tsutomu, to Toyo Kogyo Co., Ltd. Fuel control means for internal combustion engines. 4,253,437, Cl. 123-325.000.

Hardin, George T., to Robertshaw Controls Company. Control device mounting means and parts therefor. 4,253,486, Cl. 137-343.000.

Hardin, William C., Jr., to Pelton & Crane Company. Self-ventilating dental lighting device. 4,254,454, Cl. 362-282.000.

Hardman, Harley F.; and Schwerko, Albert P., to Standard Oil Company. Dehydration of water soluble monomers with liquid carbon dioxide. 4,253,948, Cl. 210-634.000.

Harford, Jack R., to RCA Corporation. Noise cancellation circuit. 4,254,436, Cl. 358-157.000.

Harkness, Travis O. Article loading and handling device. 4,253,786, Cl. 414-24.500.

Harrell, John T.: *See*—
Beno, Lawrence A.; Harrell, John T.; Evans, Albert B., Jr.; and Gaudig, Jay R., 4,254,327, Cl. 235-92.0CC.

Harris, James A.; and Arthur, Jett C., Jr., to United States of America, Agriculture. Process for photoinitiated, polymeric encapsulation of cotton fibers in durable-press textiles. 4,253,841, Cl. 8-116.00R.

Hart, Vicki L., to SCM Corporation. Pyrophosphonates and method of making same. 4,254,073, Cl. 260-927.00R.

Hart, William B., to Delta Materials Research Limited. Jet nozzles. 4,253,611, Cl. 239-602.000.

Hartlaub, Jerome T.; McDonald, Ray S.; and Shearon, Lawrence W., to Medtronic, Inc. Temporary and permanent programmable digital cardiac pacemaker. 4,253,466, Cl. 128-419.0PG.

Hartley, Sydney S.: *See*—
Ashford, David W.; Davies, William B.; and Hartley, Sydney S., 4,253,249, Cl. 434-22.000.

Hartmann & Lammle GmbH & Co.: *See*—
Schulze, Eckehart, 4,253,358, Cl. 82-5.000.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
Goossens, Walter; and Schrank, Wolfgang, 4,253,915, Cl. 202-262.000.

Hartung, Sigurd: *See*—
Wambach, Raimund; Hartung, Sigurd; Reiss, Gerhard; and Puppe, Lothar, 4,254,062, Cl. 570-211.000.

Harvest Industries, Inc.: *See*—
Williams, Galen, 4,253,424, Cl. 119-61.000.

Haslett, Glenn M., to Caterpillar Tractor Co. Slack control for crawler type track assemblies. 4,253,708, Cl. 305-47.000.

Hatch, Charles E., III, to FMC Corporation. Ester resolution process. 4,254,279, Cl. 560-178.000.

Hatch, Edwin B.: *See*—
Floeter, Larry A.; Derber, Howard J.; and Hatch, Edwin B., 4,253,349, Cl. 74-878.000.

Haub, Martin; and Stein, Manfred, to Quarz-Zeit AG. Pulse control for an electric clock. 4,254,491, Cl. 368-85.000.

Hauptschein, Murray: *See*—
Toukan, Sameeh S.; and Hauptschein, Murray, 4,254,266, Cl. 548-173.000.

Haven, Duane A., to Tektronix, Inc. Insulated web collector storage target for a cathode ray tube. 4,254,360, Cl. 313-395.000.

Hawes, Slater W.: *See*—
Berg, Morris; Hawes, Slater W.; Kennard, Frederick L., III; and Kikuchi, Paul C., 4,253,934, Cl. 204-195.00S.

Hay, Allan S., to General Electric Company. Cyclic polyformals and method for making. 4,254,252, Cl. 528-205.000.

Hay, Harold L., to Columbia Steel Casting Co., Inc. Magnetic breaker bar. 4,253,706, Cl. 299-94.000.

Hay, Wayne W., to Airco, Inc. Selector valve for anesthesia machine. 4,253,453, Cl. 128-200.190.

Hayashi, Masaki: *See*—
Konno, Mitoshi; Itoh, Hiroyuki; Tokuhiro, Takao; Ohta, Katsumi; and Hayashi, Masaki, 4,254,056, Cl. 564-387.000.

Haytayan, Harry M. Fluid powered impact tool. 4,253,598, Cl. 227-119.000.

Heath, Robert E.: *See*—
Babuka, Robert; Heath, Robert E.; Saxenmeyer, George J., Jr.; and Schultz, Lewis K., 4,254,431, Cl. 357-82.000.

Hebron, Terrance J.: *See*—
Bacehowski, David V.; and Hebron, Terrance J., 4,253,458, Cl. 128-272.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Conditioner for flotation of oxidized coal. 4,253,944, Cl. 209-166.000.

Hefton, John M.: *See*—
Eisinger, Magdalena G.; and Hefton, John M., 4,254,226, Cl. 435-240.000.

Hegarty, William P., to Air Products and Chemicals, Inc. Process for producing hydrogen from synthesis gas containing COS. 4,254,094, Cl. 423-648.00R.

Held, Kurt. Resilient slide surface seal for double belt presses. 4,253,391, Cl. 100-154.000.

Henderson, John G. N.; and Maturo, Robert J., to RCA Corporation. Channel identification apparatus useful in a multiband sweep type tuning system. 4,254,506, Cl. 455-158.000.

Hendricks, Carl C.: *See*—
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Hendrickson, Thomas C.; and Liebowitz, Marvin, to Colgate-Palmolive Company. Laundry conditioner dispensing article. 4,254,139, Cl. 428-283.000.

Hennessey, William M.: *See*—
Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., 4,254,361, Cl. 313-519.000.

Henschel, Claude: *See*—
DeCristofaro, Nicholas J.; and Henschel, Claude, 4,253,870, Cl. 75-159.000.

Hercules Incorporated: *See*—
Eastman, Gordon E., 4,253,968, Cl. 210-698.000.
Landoll, Leo M.; and Ropp, Walter S., 4,254,207, Cl. 430-137.000.

Herden, Werner, to Robert Bosch GmbH. Electromechanical force converter for measuring gas pressure. 4,254,395, Cl. 338-42.000.

Herr, Marianne; and Frishauf, Stephen H., to Herr, Marianne. Radiation protection device, particularly for medical X-ray, radiation therapy and diagnostic use. 4,254,341, Cl. 250-519.000.

Hesser, Kenneth R., to Budd Company, The. Supporting means for a water tank for a railway car. 4,253,401, Cl. 105-329.00R.

Hesston Corporation: *See*—
Schmitt, Raymond F.; Gaeddert, Melvin V.; and McWhirt, Bobby D., 4,253,387, Cl. 100-5.000.

Hewson, Andrew J. Adjustable work positioning tool. 4,253,649, Cl. 269-45.000.

Heyer, Adele, Hans P. Heyer, heirs: *See*—
Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased; and Wanders, Marlene, heir, 4,253,815, Cl. 425-235.000.

Heyer, Hans, deceased: *See*—
Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased; and Wanders, Marlene, heir, 4,253,815, Cl. 425-235.000.

Heymann, Kurt; and Rolff, Rolf, to Schering Aktiengesellschaft. Catalytic lacquer for producing printing circuits. 4,253,875, Cl. 106-1.260.

Hezel, Rudolf. Solar cells composed of semiconductive materials. 4,253,881, Cl. 136-256.000.

Hibbitts, Charles H.; Price, Byron F.; Cogbill, Everett C.; Kelly, James G.; and Glass, James E., to American Brands, Inc. Method for expanding tobacco. 4,253,474, Cl. 131-140.00P.

Hibbs, Clair M.: *See*—
Graham, Joseph A., Jr.; and Hibbs, Clair R., 4,254,098, Cl. 424-14.000.

Hibbs, Clair R.: *See*—
Graham, Joseph A., Jr.; and Hibbs, Clair R., 4,254,098, Cl. 424-14.000.

Hickey, Gerald A.: *See*—
Rees, David H., Jr.; and Hickey, Gerald A., 4,253,273, Cl. 47-58.000.

Hickman, Stephen L.; and Pifer, Clifford E., to Brazeway, Inc. Fixtureless method of making tube joints. 4,253,224, Cl. 29-157.00T.

Hill, John A.: *See*—
Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,253,460, Cl. 128-283.000.

Hilliard, Garland E.: *See*—
Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., 4,253,923, Cl. 204-98.000.

Hills-McCanna Company: *See*—
Priese, Werner K.; and Koehlert, Charles I., 4,253,640, Cl. 251-56.000.

Hillstrom, Per A. R.; and Sondell, Kent I., to Mo och Domsjo Aktiebolag. Process for maintaining a low sodium chloride content in recycled sodium chemicals of sodium-based pulp manufacturing processes. 4,253,911, Cl. 162-30.00R.

Hines, David A.; Jones, Richard T.; and Roesler, Frank C., to Imperial Chemical Industries Limited. Sewage treatment-flotation apparatus. 4,253,949, Cl. 210-44.000.

Hinzpeter, Jurgen; Schmidt, Ingo; and Friedrichs, Konrad, to Wilhelm Fette GmbH, Firma. Method of and a device for sorting pellets upon their molding in a preforming press. 4,253,811, Cl. 425-149.000.

Hirose, Masuhiko: *See*—
Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, 4,254,208, Cl. 430-215.000.

Hirschmann, Ralph F.: *See*—
Powell, Burwell F.; and Hirschmann, Ralph F., 4,254,273, Cl. 560-29.000.

Hisazumi, Atsuhi: *See*—
Ojima, Shin; Ohgami, Kazuhiko; and Hisazumi, Atsuhi, 4,254,488, Cl. 368-82.000.

Hitachi Chemical Co., Ltd.: *See*—
Takahashi, Hiroshi; Nakao, Kiyoshi; and Katagiri, Masaaki, 4,254,172, Cl. 428-131.000.

Hitachi Heating Appliances Co., Ltd.: *See*—
Ohkawa, Shuji; and Kikuchi, Itsuo, 4,254,318, Cl. 219-10.55D.

Hitachi, Ltd.: *See*—
Ido, Satoshi; Hamamoto, Nobuo; and Ichino, Kazuo, 4,254,368, Cl. 318-603.000.
Kato, Iwao; and Sonobe, Shigeru, 4,253,765, Cl. 356-328.000.
Kuwabara, Takao, 4,253,794, Cl. 415-1.000.
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,254,197, Cl. 430-28.000.
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.
Nakahata, Kozo, 4,254,432, Cl. 358-10.000.
Segawa, Yorihide; Fujisawa, Fumio; and Shiohata, Koki, 4,253,800, Cl. 416-203.000.
Yoda, Haruo; and Motoike, Jun, 4,254,400, Cl. 340-146.3MA.

Hitomi, Shinichi: *See*—
Iida, Katsuhiro; Kamide, Takao; and Hitomi, Shinichi, 4,253,541, Cl. 180-168.000.
Hiyoshi, Teruo; Nakada, Akira; and Yamada, Shigeru, to Nippon Gakki Seizo Kabushiki Kaisha. Musical tone forming device by FM technology. 4,253,367, Cl. 84-1.220.
Ho, Chung W., to International Business Machines Corporation. Discretionary fly wire chip interconnection. 4,254,445, Cl. 361-392.000.
Hodson, Hollis C. Theft guard for automotive gasoline tank. 4,253,698, Cl. 296-1.00C.
Hoechst Aktiengesellschaft: *See*—
Arndt, Otto; and Tronich, Wolfgang, 4,254,054, Cl. 260-510.000.
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,253,879, Cl. 106-165.000.
Loewe, Heinz; Urbanietz, Josef; Duwel, Dieter; and Kirsch, Reinhard, 4,254,143, Cl. 424-300.000.
Spietschka, Ernst; Urban, Manfred; and Paulus, Erich, 4,253,839, Cl. 8-565.000.
Hoefelmayr, Tilman, to Bio-Melktechnik Swiss Hoefelmayr & Co. Collecting piece. 4,253,420, Cl. 119-14.550.
Hofer, Gerald, to Robert Bosch GmbH. Fuel injection pump. 4,253,439, Cl. 123-368.000.
Hoffmann-La Roche Inc.: *See*—
Keller, Hans E.; and Klaeui, Heinrich, 4,254,100, Cl. 424-37.000.
Kompis, Ivan; and Wick, Alexander E., 4,254,286, Cl. 568-442.000.
Schleich, Kuno; and Stoller, Hansjorg, 4,254,281, Cl. 560-260.000.
Hoffmann, Rudiger: *See*—
Feichtiger, Dieter; and Hoffmann, Rudiger, 4,253,319, Cl. 70-264.000.
Hogenson, LaVernon S. Seed confining attachment for a wheat drill. 4,253,412, Cl. 111-86.000.
Hogue, Marcus P.: *See*—
Grindle, James L.; and Hogue, Marcus P., 4,254,456, Cl. 362-300.000.
Hohne, Gerd: *See*—
Jundt, Werner; Bodig, Bernd; Hohne, Gerd; Pfaff, Georg; Sohner, Gerhard; and Kalkhof, Bernd, 4,253,442, Cl. 123-618.000.
Holdner, Donald N., to Alcan Research & Development Limited. Procedure and apparatus for baking carbon bodies. 4,253,823, Cl. 432-18.000.
Holland, Eddie L.; and White, Charles A., to U.S. Industries, Inc. Cage reinforcement system. 4,253,422, Cl. 119-17.000.
Hollander, Nathan. Safety knob. 4,253,690, Cl. 292-354.000.
Holmes, Robert H.: *See*—
Janisiewicz, Stanley; and Holmes, Robert H., 4,253,585, Cl. 221-242.000.
Holt, John P.; and Cash, Theodore P., to Valley Mineral Products Corporation. Dry heat setting refractory and methods of using same. 4,253,590, Cl. 222-590.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Yamada, Yoji; Nishimura, Sadanori; Shimizu, Takeyuki; and Mazono, Masakazu, 4,253,553, Cl. 192-3.620.
Yoshioka, Tomoaki; and Fujioka, Keiji, 4,253,512, Cl. 152-353.00G.
Honeywell Inc.: *See*—
Anderson, Rogers H.; G., Enrique B.; and Chen, Di, 4,253,731, Cl. 350-96.340.
Stauffer, Norman L.; and Wilwerding, Dennis J., 4,254,330, Cl. 250-201.000.
Honeywell Information Systems Inc.: *See*—
Raymond, James C.; Lemay, Richard A.; and Kelly, Richard P., 4,254,462, Cl. 364-200.000.
Honstein, Jerry P.: *See*—
Coles, Donna C.; and Honstein, Jerry P., 4,253,828, Cl. 433-6.000.
Hooker Chemicals & Plastics Corp.: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,253,932, Cl. 204-253.000.
Hoover Universal, Inc.: *See*—
Hancock, William L.; Kitchen, John P.; and Mizelle, Ned W., 4,253,208, Cl. 5-247.000.
Hoppe, Joachim: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.
Horiba, Atsushi, to Horiba, Ltd. Optoacoustic analyzer. 4,253,770, Cl. 356-433.000.
Horiba, Ltd.: *See*—
Horiba, Atsushi, 4,253,770, Cl. 356-433.000.
Horn and Gladden Lint Cleaner: *See*—
Jackson, Richard E.; and Sparks, John E., 4,253,855, Cl. 55-290.000.
Horodysky, Andrew G.; and Gemmill, Robert M., Jr., to Mobil Oil Corporation. Phosphorus-containing compounds and lubricants containing same. 4,253,973, Cl. 252-46.700.
Horodysky, Andrew G.: *See*—
Gemmill, Robert M., Jr.; and Horodysky, Andrew G., 4,253,978, Cl. 252-32.70E.
Horvath, Imre; Kwasnitza, Kurt; and Meyer, Gundolf, to BBC Brown, Boveri & Company, Limited. Electrical superconductor. 4,254,299, Cl. 174-15.00S.
Hoshidenki-Seizo Kabushiki Kaisha: *See*—
Ojima, Shin; Ohgami, Kazuhiko; and Hisazumi, Atsuhi, 4,254,488, Cl. 368-82.000.
Hoskinson, William R.; and Schwartz, Harold O., to Wurlitzer Company, The. Large scale integrated circuit chip for an electronic organ. 4,253,366, Cl. 84-1.030.
Hoskinson, William R., to Wurlitzer Company, The. Digital control of attack and decay. 4,253,369, Cl. 84-1.260.
Hosooka, Syuichi, to Yoshida Kogyo K.K. Locking mechanism for double-sliding sashes. 4,253,688, Cl. 292-52.000.
Houck, David J., to Electronic Modules Corporation. Length probe with tracing unit and switch arrangement. 4,253,239, Cl. 33-141.00R.
Howard, Dennis D., to Lord Corporation. Actinic radiation-curable formulations of unsaturated polyetherester urethane. 4,254,230, Cl. 525-28.000.
Howard, Joseph W.; and Duggins, Wayne L., to Burlington Industries, Inc. Sock construction. 4,253,317, Cl. 66-186.000.
Howmedica Inc.: *See*—
Findl, Eugene; and Kurtz, Robert J., 4,254,377, Cl. 324-453.000.
Hsia, Yukun; and Wishneusky, John A., to McDonnell Douglas Corporation. Reconfigurable memory circuit. 4,254,477, Cl. 365-200.000.
Hughes, Ralph L. Golf swing muscle developer. 4,253,663, Cl. 272-136.000.
Hultgren, Claes J. Miniature slide storage tray. 4,253,789, Cl. 414-405.000.
Hummel, Merritt J., to PPG Industries, Inc. Heated lance roof cleaning process. 4,253,860, Cl. 65-27.000.
Humphrey, Kurt D.: *See*—
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.
Hunt, Arthur J.; and Hunt, Arthur J., Jr. System for extracting liquids from fruit and the like. 4,253,390, Cl. 100-45.000.
Hunt, Arthur J., Jr.: *See*—
Hunt, Arthur J.; and Hunt, Arthur J., Jr., 4,253,390, Cl. 100-45.000.
Hunt, David J., to International Computers Limited. Binary adder circuit. 4,254,471, Cl. 364-784.000.
Hunt Valve Co., Inc.: *See*—
White, Ira G., 4,253,808, Cl. 418-126.000.
Hunter, Edwin J., to Toro Company, The. Part-circle sprinkler with reversible stator. 4,253,608, Cl. 239-206.000.
Huntzinger, Guy A. L., to Forges de Strasbourg. Revolving hydraulic press with heated platen. 4,254,078, Cl. 264-320.000.
Hurlbut, Donovan W.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; and Terry, Angel F., 4,254,329, Cl. 235-379.000.
Husa, Emmett O. Folding crutch. 4,253,478, Cl. 135-68.000.
Hwang, Shy-Shung: *See*—
Landheer, Dolf; Hwang, Shy-Shung; Nesta, Charles; and Squassoni, Gino F., 4,254,424, Cl. 346-139.00C.
Hydrotechnik GmbH: *See*—
Leverberg, Siegfried, 4,253,488, Cl. 137-382.000.
Hydrotile Canada Limited: *See*—
Christian, Alfred W., 4,253,814, Cl. 425-150.000.
Hyer, Harry J.; and Sundberg, John E., to United Technologies Corporation. Synthesis of tetrasodium pentaerythrityl tetrakis (dithiocarbamate). 4,254,055, Cl. 260-513.500.
Hylsa, S.A.: *See*—
Price-Falcon, Juan F.; and Martinez-Vera, Enrique R., 4,253,867, Cl. 75-35.000.
Hynson, Richard B.: *See*—
Rudolph, Marvin J.; and Hynson, Richard B., 4,254,149, Cl. 426-5.000.
Iadipaolo, Rene M.: *See*—
Dewar, Robert, Jr.; and Iadipaolo, Rene M., 4,254,433, Cl. 358-105.000.
Ibsen, Barrie G. Method and apparatus for well perforation and fracturing operations. 4,253,523, Cl. 166-299.000.
Ichihara, Yutaka, to Nippon Kogaku K.K. Focus condition detecting device. 4,253,752, Cl. 354-25.000.
Ichikawa, Akio: *See*—
Tsuchiya, Yasuyuki; Ichikawa, Akio; and Yamasoe, Kastuyoshi, 4,253,930, Cl. 204-181.00C.
Ichino, Kazuo: *See*—
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Ichinose, Isao: *See*—
Doi, Koichi; Mori, Fumio; Ichinose, Isao; Ogimoto, Tetsuomi; and Kitakawa, Katsuhiko, 4,253,580, Cl. 215-228.000.
Ido, Satoshi; Hamamoto, Nobuo; and Ichino, Kazuo, to Nippon Telegraph and Telephone Public Corporation; and Hitachi, Ltd. Apparatus for driving a motor. 4,254,368, Cl. 318-603.000.
Ihara Chemical Industry Co., Ltd.: *See*—
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, 4,254,262, Cl. 546-287.000.
Iida, Katsuhiro; Kamide, Takao; and Hitomi, Shinichi, to Kabushiki Kaisha Komatsu Seisakusho. Steering control system for an unmanned vehicle. 4,253,541, Cl. 180-168.000.
Iinuma, Kazuhiro; Kidokoro, Takeshi; and Takamizawa, Kinya, to Tokyo Shibaura Electric Co., Ltd. Ultrasonic diagnostic equipment. 4,253,338, Cl. 73-626.000.
Ikeda, Itsuo: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, to Nippon Electric Co., Ltd. Water meter comprising a ferromagnetic magnetoresistor coupled to a rotatable permanent magnet. 4,253,341, Cl. 73-861.770.
Ikeda, Toshimitsu: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,254,202, Cl. 430-120.000.

Ikekawa, Nobuo: *See—*
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida. Jun-ichi, 4,254,045, Cl. 260-397.200.
Illman, Walter F.; Conklin, Delano M.; Karnes, Clifton H., Jr.; and Malpass, Robert C., to Burlington Industries, Inc. Hot-melt size compositions and process for textiles. 4,253,840, Cl. 8-115.600.
Illy, Ernesto. Coffee machine. 4,253,385, Cl. 99-281.000.
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst component for use in the polymerization of α-olefins and a method of using the same. 4,253,984, Cl. 252-429.00B.
Imamura, Kazuo, to Daido Kogyo Co., Ltd. Light alloy split wheel rim. 4,253,514, Cl. 152-405.000.
Imperial Chemical Industries Limited: *See—*
Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,254,027, Cl. 260-207.000.
Brown, Edward D., 4,254,122, Cl. 424-249.000.
Hines, David A.; Jones, Richard T.; and Roesler, Frank C., 4,253,949, Cl. 210-44.000.
IMS Limited: *See—*
Ogle, Robert W., 4,253,501, Cl. 141-27.000.
In. Da. Te. Aktiengesellschaft: *See—*
Janovtchik, Viacheslav J., 4,254,152, Cl. 426-399.000.
Inaba, Naomi: *See—*
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,253,984, Cl. 252-429.00B.
Inami, Yasuhiko: *See—*
Nakauchi, Hiroshi; Inami, Yasuhiko; and Yano, Kozo, 4,253,741, Cl. 350-357.000.
Inco Safety Products Company: *See—*
Dalmaso, George C., 4,253,544, Cl. 182-3.000.
Indiana University Foundation: *See—*
Campaigne, Ernest E.; and Selby, Thomas, 4,254,259, Cl. 544-8.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
Rattin, Luciano, 4,253,759, Cl. 355-14.0SH.
Inland Steel Company: *See—*
Marshall, John M.; Veslocki, Timothy A.; and Sulicz, James J., 4,253,644, Cl. 266-44.000.
Innovative Concepts, Inc.: *See—*
Long, Jerry M.; and Womack, James A., 4,253,568, Cl. 206-387.000.
Inoue, Mitsumasa: *See—*
Kawamura, Yoshihisa; Inoue, Mitsumasa; and Saito, Masaaki, 4,253,441, Cl. 123-445.000.
Inouye, Henry: *See—*
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Inskeep, John M.: *See—*
Murib, Jawad H.; and Inskeep, John M., 4,254,039, Cl. 260-346.110.
Institul de Cercetari Chimicofarmaceutice: *See—*
Timar, Magdalena, 4,254,103, Cl. 424-106.000.
Institut Francais du Petrole: *See—*
Juguin, Bernard; Franck, Jean-Pierre; Le Page, Jean-Francois; and de Gaudemaris, Gabriel, 4,254,294, Cl. 585-525.000.
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Institute po Metaloznanie I Technologia Na Metalite: *See—*
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.
International Business Machines Corporation: *See—*
Acitelli, Mario A.; and Woods, James T., 4,254,186, Cl. 428-462.000.
Babuka, Robert; Heath, Robert E.; Saxenmeyer, George J., Jr.; and Schultz, Lewis K., 4,254,431, Cl. 357-82.000.
Brandon, Fred Y.; Chang, Jack P.; Clark, William D.; and Stahlberg, Eugene G., 4,253,392, Cl. 100-155.00R.
Crooks, Walter; and Pennington, Keith S., 4,253,775, Cl. 400-198.000.
Feth, George C.; and Wiedmann, Siegfried K., 4,254,428, Cl. 357-15.000.
Fowler, Raymond L.; and Schneider, Timothy L., 4,254,439, Cl. 358-265.000.
Ho, Chung W., 4,254,445, Cl. 361-392.000.
Kemlage, Bernard M., 4,254,161, Cl. 427-94.000.
International Computers Limited: *See—*
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International Flavors & Fragrances Inc.: *See—*
Marmo, Don; and Rocco, Frank L., 4,253,473, Cl. 131-2.000.
International Harvester Company: *See—*
McCandless, James C., 4,253,435, Cl. 123-193.00P.
International Nickel Company, Inc., The: *See—*
Bernstein, Philip; Coffey, James P.; and Wilson, James W., 4,254,192, Cl. 429-181.000.
Hall, Dale E.; and Clark, William D. K., 4,253,919, Cl. 204-37.00R.
International Standard Electric Corporation: *See—*
Vance, Ian A. W., 4,254,503, Cl. 375-91.000.
International Telephone and Telegraph Corporation: *See—*
Iyengar, Rama, 4,253,863, Cl. 65-181.000.
Lewis, James P.; and Carroll, James C., 4,254,504, Cl. 455-76.000.
Nemit, Jeffrey T.; and Sanders, Bobby J., 4,254,386, Cl. 333-128.000.
Treiber, Robert, 4,254,305, Cl. 179-16.00F.
Intveld, Dwayne J., to Deere & Company. Instrument panel cover. 4,253,537, Cl. 180-90.000.
Iori, Giuseppe; and Romano, Ugo, to Anic, S.p.A. Process for the preparation of phenolic ethers. 4,254,276, Cl. 560-64.000.
Iowa State University Research Foundation, Inc.: *See—*
Kranzler, Glenn A., 4,253,244, Cl. 34-48.000.
Ishihara, Satoshi, to Mamiya Koki Kabushiki Kaisha. Mirror-shutter device in single-lens reflex camera. 4,253,754, Cl. 354-154.000.
Ishii, Sumio: *See—*
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Ishii, Yoichi: *See—*
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Ishikawa, Shingo: *See—*
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Ishizuka, Yutaka; and Kobayashi, Shinichi, to Diesel Kiki Co., Ltd. Vane compressor with rotor having metallic base and vane slots and a periphery of lower specific gravity. 4,253,809, Cl. 418-152.000.
Isreeli, Jack: *See—*
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Itoh, Hiroyuki: *See—*
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Itoh, Masayuki: *See—*
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ITT Industries, Inc.: *See—*
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Ullrich, Manfred F., 4,254,345, Cl. 307-221.00D.
Iwanami, Yoshiyuki: *See—*
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Iwaosa, Katsuaki: *See—*
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Iwasaki, Motoaki: *See—*
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Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Sekiguchi, Kouichi; and Takano, Toshiichi, 4,254,306, Cl. 179-99.00R.
Iyengar, Rama, to International Telephone and Telegraph Corporation. Apparatus for mass producing fiber optic preforms and optic fibers. 4,253,863, Cl. 65-181.000.
Izuhara, Wataru: *See—*
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J. I. Case Company: *See—*
Nissen, Roland N., 4,253,529, Cl. 172-831.000.
Jackson, R. Tom: *See—*
Ziegenhain, William C.; Jackson, R. Tom; and Rose, LeRoy, 4,254,287, Cl. 568-621.000.
Jackson, Richard E.; and Sparks, John E., to Horn and Gladden Lint Cleaner. Air filter. 4,253,855, Cl. 55-290.000.
Jacobson, Chester F., to Gillette Company, The. Shaving system. 4,253,235, Cl. 30-47.000.
Jacobson, Chester F., to Gillette Company, The. Razor blade assembly. 4,253,236, Cl. 30-47.000.
Jacobson, Chester F., to Gillette Company, The. Razor handle. 4,253,237, Cl. 30-89.000.
Jacobson, Henning W.: *See—*
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Jaisinghani, Rajan A.: *See—*
Midkiff, David G.; and Jaisinghani, Rajan A., 4,253,954, Cl. 210-168.000.
Jalas, Leon C. Pneumatic planter having controlled movable nozzle. 4,253,586, Cl. 221-278.000.
James, Granville C., to Coal Industry (Patents) Limited. Dust filter apparatus. 4,253,854, Cl. 55-227.000.
Jamieson, Alastair M.: *See—*
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Janczyk, Ryszard: *See—*
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Janisiewicz, Stanley; and Holmes, Robert H., to Universal Instruments Corporation. Dip component supply magazine. 4,253,585, Cl. 221-242.000.
Janovtchik, Viacheslav J., to In. Da. Te. Aktiengesellschaft. Preserving food products. 4,254,152, Cl. 426-399.000.
Janssen Pharmaceutica, N.V.: *See—*
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Japan Steel Works, Ltd., The: *See—*
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Jarreau, Donald J. Fireplace lighter. 4,253,820, Cl. 431-344.000.
Jentsch, Donald G.; and Ardoin, Frank L. Safety-bleed-stop hose coupling. 4,253,683, Cl. 285-13.000.
Jerde, Leslie G.: *See—*
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Jersey Nuclear-AVCO Isotopes, Inc.: *See—*
Rostler, Peter S., 4,254,336, Cl. 250-294.000.
Jeschar, Rudolf: *See—*
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Jeunhomme, Luc; and Pocholle, Jean-Paul, to Compagnie Generale d'Electricite S.A. Optical coupler for optical fibres. 4,253,727, Cl. 350-96.150.

Jin, Sungho, to Bell Telephone Laboratories, Incorporated. Fe-Cr-Co Permanent magnet alloy and alloy processing. 4,253,883, Cl. 148-103.000.

Jirkovsky, Ivo L.: *See*—
Gauthier, Jean A.; and Jirkovsky, Ivo L., 4,254,118, Cl. 424-246.000.
Gauthier, Jean A.; and Jirkovsky, Ivo L., 4,254,121, Cl. 424-248.550.

JMJ Electronics Corp.: *See*—
Belson, James M., 4,254,459, Cl. 363-24.000.

Jodehl, Poul A. Method of treating polluted aqueous media. 4,253,958, Cl. 210-728.000.

Jodrey, Robert M.; and Young, Kenneth, to Dennison Manufacturing Company. High speed decorator. 4,253,904, Cl. 156-497.000.

Johansson, Bengt R., to Antiphon AB. Device for absorption of airborne sound. 4,253,543, Cl. 181-286.000.

Johns-Manville Corporation: *See*—
Gross, Stephen E., 4,253,990, Cl. 252-455.00R.

Johnson, Bertram: *See*—
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Johnson, Bruce A., to Woodward Governor Company. Temperature responsive control apparatus. 4,253,603, Cl. 236-86.000.

Johnson, Charles H. Ice fishing tipup. 4,253,262, Cl. 43-17.000.

Johnson, Dudley B., to Texas Instruments Incorporated. Snap-through characteristic keyboard switch. 4,254,309, Cl. 200-5.00A.

Johnson, Gordon C.: *See*—
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Johnson, Harlan B., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali process. 4,253,924, Cl. 204-98.000.

Johnson, Lonnie G. Automatic sprinkler control. 4,253,606, Cl. 239-63.000.

Johnson, Richard. Electric furnace fireplace. 4,253,444, Cl. 126-6.000.

Johnson, Richard V., to Xerox Corporation. Single sideband scanner. 4,253,725, Cl. 350-6.910.

Jolly, Stuart; T., to RCA Corporation. Method of depositing layers of semi-insulating gallium arsenide. 4,253,887, Cl. 148-175.000.

Jones, Richard T.: *See*—
Hines, David A.; Jones, Richard T.; and Roesler, Frank C., 4,253,949, Cl. 210-44.000.

Jordan, James R., to Sybron Corporation. Interpolating digital data processing apparatus for correlation-type flow measurement. 4,254,470, Cl. 364-577.000.

Joret, Robert, to S.E.C.O.M.A.T., Societe Europeenne de Construction Mechanique Automobile et Thermique. System for the combustion of liquid fuel, notably of the mineral-oil type. 4,253,819, Cl. 431-208.000.

Jos. Schlitz Brewing Company: *See*—
Sauer, Henry; and Lockhart, Steven A., 4,253,505, Cl. 141-147.000.

Jubilee Foods, Inc.: *See*—
De Socio, Paul; Kaporsvsky, Morris; and Tropp, Joel S., 4,254,156, Cl. 426-565.000.

Judd, Edward A.: *See*—
Mackal, Glenn H.; and Judd, Edward A., 4,253,812, Cl. 425-157.000.

Juengel, Richard O.; and Cook, Kenneth J., to Valeron Corporation, The. Remote metering system. 4,254,472, Cl. 364-900.000.

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Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; and Miyake, Kentaro, 4,254,227, Cl. 435-97.000.

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Takizawa, Tatsuji; and Noda, Nobutaka, 4,253,761, Cl. 355-15.000.

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Iida, Katsuhiro; Kamide, Takao; and Hitomi, Shinichi, 4,253,541, Cl. 180-168.000.

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Sato, Yo, 4,253,395, Cl. 101-292.000.

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Tada, Eiji, 4,253,394, Cl. 101-250.000.

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Kakugo, Masahiro: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,254,237, Cl. 525-323.000.

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Kato, Hitoshi; Nagai, Koji; and Kameda, Hiromi, 4,254,204, Cl. 430-122.000.

Kamhi, Victor M.: *See*—
Seeley, Douglas A.; and Kamhi, Victor M., 4,254,196, Cl. 430-17.000.

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Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.

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Spigarelli, Rudolph D., 4,253,399, Cl. 105-62.00R.

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Fan, Liang-Tseng; and Wen, Chin-Yung, 4,253,947, Cl. 210-610.000.

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Kaplan, Fred A.: *See*—
Emmons, William D.; Sperry, Peter R.; and Kaplan, Fred A., 4,253,397, Cl. 101-450.100.

Kaplan, Michael L. Cat scratching and climbing post. 4,253,423, Cl. 119-29.000.

Kaporsvsky, Morris: *See*—
De Socio, Paul; Kaporsvsky, Morris; and Tropp, Joel S., 4,254,156, Cl. 426-565.000.

Karbach, Helmut: *See*—
Kiefer, Gunther; and Karbach, Helmut, 4,253,364, Cl. 83-217.000.

Karikas, John J., to General Electric Company. Mercury doser. 4,253,591, Cl. 222-636.000.

Karikas, John J., to General Electric Company. Inlead and method of making a discharge lamp. 4,254,356, Cl. 313-217.000.

Karll, Robert E.: *See*—
Valcho, Joseph J.; and Karll, Robert E., 4,253,974, Cl. 252-8.55D.

Karnes, Clifton H., Jr.: *See*—
Illman, Walter F.; Conklin, Delano M.; Karnes, Clifton H., Jr.; and Malpass, Robert C., 4,253,840, Cl. 8-115.600.

Karnis, Alkibiadis, to Domtar Inc. Fibre flexibility meter. 4,253,329, Cl. 73-63.000.

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Kasselmann, John T.; and Colpaert, James J., to Bendix Corporation, The. Disc brake and adjuster therefor. 4,253,550, Cl. 188-71.900.

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Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,253,760, Cl. 355-14.0CU.

Katagiri, Masaaki: *See*—
Takahashi, Hiroshi; Nakao, Kiyoshi; and Katagiri, Masaaki, 4,254,172, Cl. 428-131.000.

Kato, Hitoshi; Nagai, Koji; and Kameda, Hiromi, to Minolta Camera Kabushiki Kaisha. Magnetic brush electrographic developing method. 4,254,204, Cl. 430-122.000.

Kato, Iwao; and Sonobe, Shigeru, to Hitachi, Ltd. Multi-wavelength spectrophotometer. 4,253,765, Cl. 356-328.000.

Kato, Yoshiaki, to Nissan Motor Company, Limited. Fuel consumption measuring apparatus. 4,253,330, Cl. 73-113.000.

Katona, Joseph W. Clip-aire oven door window. 4,253,286, Cl. 52-171.000.

Katz, David H., to Scripps Clinic and Research Foundation. Immunochemical conjugates: method and composition. 4,253,995, Cl. 260-6.000.

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Kauffman, Robert N.: *See*—
Smith, James D. B.; and Kauffman, Robert N., 4,254,351, Cl. 310-45.000.

Kaufman, John G. Cable connector. 4,253,721, Cl. 339-91.00R.

Kaufman, Mark. System for revealing cracks in cylindrical members such as bolts, axles, etc., in situ. 4,254,415, Cl. 340-679.000.

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Kawamoto, Masao: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.
Kawamura, Naoto; Masegi, Koichi; and Hakamada, Isao, to Canon Kabushiki Kaisha. Image forming optical system for semiconductor laser. 4,253,735, Cl. 350-409.000.
Kawamura, Yoshihisa; Inoue, Mitsumasa; and Saito, Masaaki, to Nissan Motor Company, Limited. Fuel supply system for multi-cylinder engine equipped with fuel injector. 4,253,441, Cl. 123-445.000.
Kawanabe, Yoshihiro, to Pioneer Electronic Corporation. Push-pull amplifier circuit. 4,254,379, Cl. 330-268.000.
Kawasaki, Motoo: *See*—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,253,916, Cl. 204-14.00R.
Kawasaki Steel Corporation: *See*—
Sato, Akimone, 4,253,393, Cl. 101-35.000.
Kazen, Douglas H.; and Dengah, Rudy F., to North Pacific Dental, Inc. Autoclavable dental bur block. 4,253,830, Cl. 433-77.000.
Keck, Max H., to Goodyear Tire & Rubber Company, The. Halogen containing copolyester resins. 4,254,243, Cl. 525-444.000.
Keem, John E., to General Motors Corporation. Interactive piezoelectric knock sensor. 4,254,354, Cl. 310-329.000.
Keller, Anthony F.; and Kraybill, Albert V., to Motorola, Inc. Crystal oscillator temperature compensating circuit. 4,254,382, Cl. 331-116.00R.
Keller, Hans E.; and Klaeui, Heinrich, to Hoffmann-La Roche Inc. Vitamin A compositions. 4,254,100, Cl. 424-37.000.
Kelly, James G.: *See*—
Hibbitts, Charles H.; Price, Byron F.; Cogbill, Everett C.; Kelly, James G.; and Glass, James E., 4,253,474, Cl. 131-140.00P.
Kelly, Richard P.: *See*—
Raymond, James C.; Lemay, Richard A.; and Kelly, Richard P., 4,254,462, Cl. 364-200.000.
Kelman, Charles D. Intraocular lenses. 4,253,200, Cl. 3-13.000.
Kemlage, Bernard M., to International Business Machines Corporation. Prevention of low pressure chemical vapor deposition silicon dioxide undercutting and flaking. 4,254,161, Cl. 427-94.000.
Kendall Company, The: *See*—
Arkans, Edward J.; Annis, Larry D.; and Ellmann, Norbert W., 4,253,449, Cl. 128-24.00R.
Kennard, Frederick L., III: *See*—
Berg, Morris; Hawes, Slater W.; Kennard, Frederick L., III; and Kikuchi, Paul C., 4,253,934, Cl. 204-195.00S.
Kennecott Copper Corporation: *See*—
Wang, Chih-Chang, 4,253,917, Cl. 204-16.000.
Kennedy, Paul G.: *See*—
Yaroshuk, Nicholas; Sarkozi, Miklos; Miller, Robert C.; and Kennedy, Paul G., 4,253,768, Cl. 356-431.000.
Kennis, Ludo E. J.: *See*—
Vandenberk, Jan; Kennis, Ludo E. J.; Van Heertum, Albert H. M. Th.; and Van der Aa, Marcel J. M. C., 4,254,127, Cl. 424-263.000.
Keohan, Richard J., to Nashua Corporation. Disc container. 4,253,571, Cl. 206-444.000.
Keritsis, Gus D., to Philip Morris Incorporated. Method for denitration of tobacco employing electrodialysis. 4,253,929, Cl. 204-180.00P.
Kerklies, Bodo, to Gewerkschaft Eisenhutte Westfalia. Sprocket drum assembly. 4,253,344, Cl. 474-96.000.
Kerschner, William J., III, to General Motors Corporation. Case for luminous display with ambient light conduit assembly. 4,254,408, Cl. 340-366.00B.
Kessel, Gerd; Kummeke, Heinrich; Kupfer, Hans-Jurgen; and Rau, Joachim, to Knorr-Bremse GmbH. Pressure regulator for fluid pressures. 4,253,480, Cl. 137-102.000.
Kidokoro, Takeshi: *See*—
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Kiefer, Gunther; and Karbach, Helmut, to Adolf Illig Maschinenbau GmbH & Co. Apparatus for discharging and separating skin packages. 4,253,364, Cl. 83-217.000.
Kiefer, Kenneth P.: *See*—
O'Connor, James A.; Kiefer, Kenneth P.; and Vogel, Ralph A., 4,253,569, Cl. 206-391.000.
O'Connor, James A.; and Kiefer, Kenneth P., 4,253,570, Cl. 206-391.000.
Kifferstein, Harry P. Disposable back and head sheet with use detector. 4,253,701, Cl. 297-220.000.
Kikuchi, Itsuo: *See*—
Ohkawa, Shuji; and Kikuchi, Itsuo, 4,254,318, Cl. 219-10.55D.
Kikuchi, Kazuya, to Matsushita Electric Industrial Co., Ltd. Pretreatment of photoresist masking layers resulting in higher temperature device processing. 4,253,888, Cl. 148-187.000.
Kikuchi, Paul C.: *See*—
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Uchida, Takashi; Sasaki, Takashi; Kikuchi, Shoji; Mogaki, Katsuo; Taguchi, Masahiko; and Takada, Syun, 4,254,216, Cl. 430-551.000.
Killough, Jack D. Gate hinge and lubricating means therefor. 4,253,275, Cl. 49-239.000.
Kim, Il B. Method of reducing infection utilizing an intravascular device having antiseptic metal portion. 4,253,463, Cl. 128-348.000.
Kimura, Hiroshi; Matsutani, Kazuhito; and Tsutsumi, Shunichi, to Kao Soap Co., Ltd. Process for producing an aliphatic amine. 4,254,060, Cl. 564-479.000.
Kirchoff, Francis D.; and Manning, Ralph M., to Alco Electronic Products, Inc. Subminiature, multi-pole toggle switch with linear see-saw contacts. 4,254,310, Cl. 200-6.00R.
Kirsch, Reinhard: *See*—
Loewe, Heinz; Urbanietz, Josef; Duwel, Dieter; and Kirsch, Reinhard, 4,254,143, Cl. 424-300.000.
Kissinger, Curtis D.: *See*—
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Kiste, James H., Jr. Multi-purpose plastic dispenser. 4,253,589, Cl. 222-390.000.
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Kitahata, Sumio: *See*—
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Kitakawa, Katsuhiko: *See*—
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Kitamura, Takashi: *See*—
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Kitchen, John P.: *See*—
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Kiyokawa, Kazuo: *See*—
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Klaeui, Heinrich: *See*—
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Kleemann, Axel; Weigel, Horst; and Scherberich, Paul, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of 2-acetamidocinnamic acid. 4,254,035, Cl. 260-340.50R.
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Dithienyl beta-haloethyl carbinols. 4,254,269, Cl. 549-59.000.
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, to Bayer Aktiengesellschaft. Method of making foamed resins with internal mold-release agents. 4,254,228, Cl. 521-128.000.
Kleine, John: *See*—
Kleine, Joseph; Kleine, Michael; Kleine, John; and Kleine, Mary, 4,253,535, Cl. 180-6.240.
Kleine, Joseph; Kleine, Michael; Kleine, John; and Kleine, Mary. Novelty motor vehicle. 4,253,535, Cl. 180-6.240.
Kleine, Mary: *See*—
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Kleine, Michael: *See*—
Kleine, Joseph; Kleine, Michael; Kleine, John; and Kleine, Mary, 4,253,535, Cl. 180-6.240.
Klimmer, Josef W., to Deere & Company. Cleaning shoe for a combine harvester. 4,253,471, Cl. 130-22.00R.
Kline, Richard H., to Goodyear Tire & Rubber Company, The. Synergistic antioxidant mixtures. 4,254,020, Cl. 260-45.85H.
Kline, Richard L., to American Air Filter Company, Inc. Liquid-solids separator. 4,253,955, Cl. 210-172.000.
Kline, William M., to Medical Evaluation Devices & Instruments Corp. Thrombo-resistant non-thrombogenic objects formed from resin-graphite mixtures. 4,254,180, Cl. 428-323.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Mettig, Hermann; and Jeschar, Rudolf, 4,253,431, Cl. 123-41.720.
Kloek, James A., to Monsanto Company. Substituted-1,2,3-thiadiazole-safening agents. 4,253,864, Cl. 71-90.000.
Kloepfer, Vernon J.; and Russell, Jimmy B. Dipole antenna fed by coaxial active rod. 4,254,422, Cl. 343-792.000.
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Woermann, Eduard; Knecht, Barbara; and Roshenhauer, Matthias, 4,254,091, Cl. 423-446.000.
Knepper, Larimer J., to Sperry Corporation. Lateral float mechanism for combines. 4,253,295, Cl. 56-15.600.
Kniazzeh, Alfredo G., to Polaroid Corporation. Method for manufacturing battery vents and vented batteries. 4,254,191, Cl. 429-162.000.
Knight, Peter R., to RCA Corporation. Side pincushion correction modulator circuit. 4,254,365, Cl. 315-371.000.
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Kessel, Gerd; Kummeke, Heinrich; Kupfer, Hans-Jurgen; and Rau, Joachim, 4,253,480, Cl. 137-102.000.
Kobayashi, Eiji, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard musical instrument. 4,253,370, Cl. 84-198.000.
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, to Shikishima Tipton Mfg. Co., Ltd. Vibratory plating method. 4,253,916, Cl. 204-14.00R.
Kobayashi, Shigeru, to Owens-Illinois, Inc. Decorative air bubble formation in a glassware article. 4,253,862, Cl. 65-75.000.
Kobayashi, Shinichi: *See*—
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Kobe, Inc.: *See*—
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Kobe Steel, Limited: *See*—
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Kobori, Toshio: *See*—
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Kocolowski, Theodore. Nativity scene housing construction. 4,253,267, Cl. 46-19.000.
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Koenemann, Kurt: *See*—
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Koenig & Bauer Aktiengesellschaft: *See*—
Wieland, Erich G., 4,253,396, Cl. 101-409.000.
Koenig, Larry E. Pallet auger. 4,253,615, Cl. 241-36.000.
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Koertner, Rodney G.: *See*—
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Kohler Co.: *See*—
Bernauer, Lawrence J.; and Gault, Roger T., 4,254,064, Cl. 261-64.00E.
Kohn, Gustave K.; and Baer, Ted A., to Zoecon Corporation. (6-Phenoxy-2-pyridyl) methyl esters of imidates. 4,254,264, Cl. 546-291.000.
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Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, to Ihara Chemical Industry Co., Ltd. Process for producing phenoxycarboxylic acid derivative. 4,254,262, Cl. 546-287.000.
Kojima, Chiaki; Otobe, Takashi; and Ohki, Hiroshi, to Sony Corporation. Apparatus for optically reading information from a record carrier. 4,253,723, Cl. 350-3.720.
Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
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Komakine, Rokuro: *See*—
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Komarnycky, Peter, to Ethicon, Inc. Multistrand suture package. 4,253,563, Cl. 206-63.300.
Kompis, Ivan; and Wick, Alexander E., to Hoffmann-La Roche Inc. Benzaldehyde compounds. 4,254,286, Cl. 568-442.000.
Komurasaki, Satoshi; and Watanabe, Isao, to Mitsubishi Denki Kabushiki Kaisha. Electro optical modulation system. 4,253,734, Cl. 350-386.000.
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Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, to FMC Corporation. Process for preparing cis-3-(2,2-dihalovinyl)-2,2-dimethylcyclopropanecarboxylic acid. 4,254,282, Cl. 562-506.000.
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Koninklijke Volker Stevin N.V.: *See*—
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Uchida, Takashi; Sasaki, Takashi; Kikuchi, Shoji; Mogaki, Katsuo; Taguchi, Masahiko; and Takada, Syun, 4,254,216, Cl. 430-551.000.
Konno, Mitoshi; Itoh, Hiroyuki; Tokuhiro, Takao; Ohta, Katsumi; and Hayashi, Masaki, to Ono Pharmaceutical Co., Ltd. 2-Aminomethyl phenol derivative and process for preparing thereof. 4,254,056, Cl. 564-387.000.
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Koppers Company, Inc.: *See*—
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Kosky, Randolph: *See*—
Fonseca, Anthony G.; Bray, Bruce G.; and Kosky, Randolph, 4,253,703, Cl. 299-5.000.
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Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Salt-like products of the addition of phenols onto amino organosilane esters and method for the preparation thereof. 4,254,270, Cl. 556-413.000.
Kowallik, Jochen; and Brandner, Alexander, to Akzona Incorporated. Linear polyesters containing phosphonate heat stabilizers. 4,254,018, Cl. 260-45.85R.
Kozacka, Frederick J.; and Belcher, Richard A., to Gould Inc. Electric fuse having plug terminals. 4,254,394, Cl. 337-231.000.
Kozuka, Nobuhiko: *See*—
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Kramer, Erich, to Bayer Aktiengesellschaft. Disazo and polyazo dyestuffs. 4,254,025, Cl. 260-144.000.
Kramer, Irvin R., to United States of America, Navy. Method of protecting incinerator surfaces. 4,253,408, Cl. 110-346.000.
Kramer, Wolfgang; Buchel, Karl H.; Frohberger, Paul-Ernst; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating fungi with 2-acyloxy-1-azolyl-3,3-dimethyl-2-phenoxy-butanes. 4,254,132, Cl. 424-269.000.
Kramor Industries Ltd.: *See*—
White, David L., 4,254,404, Cl. 340-311.000.
Kramp, Ekkehard; Lenoir, John; and Marthaler, Max, to Ciba-Geigy AG. Process for the prevention of darkening and the formation of a sediment in photographic developer solutions. 4,254,215, Cl. 430-419.000.
Kranzler, Glenn A., to Iowa State University Research Foundation, Inc. Electronic control system for low temperature grain drying. 4,253,244, Cl. 34-48.000.
Krasinski, Jerzy; and Sieradzan, Andrzej, to Uniwersytet Warszawski. Generator of a harmonic of laser light. 4,253,733, Cl. 350-380.000.
Krasnov, Igor, to Varco International, Inc. Well slip assembly. 4,253,219, Cl. 24-263.00D.
Kraus, James T.: *See*—
Carrig, Thomas R.; and Kraus, James T., 4,253,402, Cl. 108-27.000.
Kraybill, Albert V.: *See*—
Keller, Anthony F.; and Kraybill, Albert V., 4,254,382, Cl. 331-116.00R.
Kreutel, Randall W., Jr., to Communications Satellite Corporation. Integrated confocal electromagnetic wave lens and feed antenna system. 4,254,421, Cl. 343-754.000.
Kristinsson, Haukur; and Traber, Walter, to Ciba-Geigy Corporation. Combatting ectoparasites with phenylaminoalkyl-2-imidazoline compounds. 4,254,133, Cl. 424-273.00R.
Kroyer, Karl K. K. Mineral-resin matrix. 4,254,019, Cl. 260-38.000.
Krsek, George, to Diamond Shamrock Corporation. Crosslinked acrylamide polymer compositions and shaped articles therefrom. 4,254,008, Cl. 260-33.40R.
Krutkov, Anatoly F.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.
Kubat, Josef; and Berggren, Kenneth S. Multilayer thermoplastic film laminate. 4,254,175, Cl. 428-213.000.
Kubelka, Axel: *See*—
Weigl, Erwin; and Kubelka, Axel, 4,253,250, Cl. 36-50.000.
Kubota, Ltd.: *See*—
Nishikawa, Munehiro, 4,253,792, Cl. 414-589.000.
Kubota, Tadashi: *See*—
Yamagami, Akio; and Kubota, Tadashi, 4,253,291, Cl. 53-399.000.
Kubotsu, Akira: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.
Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., to Burroughs Corporation. Multi-digit display apparatus. 4,254,361, Cl. 313-519.000.
Kuhnle, Willi; and Wendler, Heinz, to Zahnradfabrik Friedrichshafen AG. Electrohydraulic speed-change device for a load-shiftable reversing transmission for an automotive vehicle. 4,253,346, Cl. 74-861.000.
Kujawski, Zenon: *See*—
Pacholski, Jan; Kujawski, Zenon; Janczyk, Ryszard; and Bartczak, Marian, 4,253,297, Cl. 57-5.000.
Kulig, Francis V., to Federal Paper Board Co., Inc. Tray container with double panel sidewalls. 4,253,602, Cl. 229-31.00R.
Kummeke, Heinrich: *See*—
Kessel, Gerd; Kummeke, Heinrich; Kupfer, Hans-Jurgen; and Rau, Joachim, 4,253,480, Cl. 137-102.000.
Kummerow, Gerd; and Prietzel, Gunter, to Siemens Aktiengesellschaft. Arcing chamber with perforated plates of sieve-like ceramics. 4,254,314, Cl. 200-144.00R.
Kun, Leslie C.; and Ragi, Elias G., to Union Carbide Corporation. Enhancement for film condensation apparatus. 4,253,519, Cl. 165-110.000.
Kupfer, Hans-Jurgen: *See*—
Kessel, Gerd; Kummeke, Heinrich; Kupfer, Hans-Jurgen; and Rau, Joachim, 4,253,480, Cl. 137-102.000.
Kuprianov, Jury V.: *See*—
Bocharov, Vasily I.; Kuprianov, Jury V.; Popov, Alexandr D.; and Solomin, Vladimir A., 4,254,349, Cl. 310-13.000.
Kuraray Co., Ltd.: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.
Kurei, Hiroshi; and Morisawa, Tahei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Three operational mode camera. 4,253,756, Cl. 354-289.000.

Kuroki, Tadashi, to Nissan Motor Company, Limited. Master cylinder. 4,253,306, Cl. 60-561.000.
Kurowsky, Steven R.: *See*—
Glowaky, Raymond C.; Kurowsky, Steven R.; and Sysko, Robert J., 4,254,250, Cl. 525-350.000.
Kurtz, Robert J.: *See*—
Findl, Eugene; and Kurtz, Robert J., 4,254,377, Cl. 324-453.000.
Kuta, George S., to American Cyanamid Company. Method for the acylation of heterocyclic compounds. 4,254,043, Cl. 260-347.400.
Kuwabara, Takao, to Hitachi, Ltd. Method of controlling wicket gates of a pump-turbine. 4,253,794, Cl. 415-1.000.
Kuwazawa, Hiroyasu: *See*—
Nishi, Atsuyoshi; Kuwazawa, Hiroyasu; and Oshima, Kaneyoshi, 4,253,426, Cl. 122-13.00R.
Kuzio, Steven K. Herring strip cutter. 4,253,650, Cl. 269-87.200.
Kuznetsov, Sergei L.: *See*—
Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshik, Garifulla; and Kuznetsov, Sergei L., 4,253,322, Cl. 72-245.000.
Kvekveskiri, Anatoly T.: *See*—
Bezhanov, Tigran V.; Rcheulishvili, Edisher G.; Bezhanov, Vladimir A.; and Kvekveskiri, Anatoly T., 4,253,810, Cl. 425-64.000.
Kwasnitza, Kurt: *See*—
Horvath, Imre; Kwasnitza, Kurt; and Meyer, Gundolf, 4,254,299, Cl. 174-15.00S.
Kwast, Theodore E.: *See*—
Danon, Joseph S.; and Kwast, Theodore E., 4,253,484, Cl. 137-269.000.
Kyo, Kayomon; Asai, Yasuhiko; and Kohyama, Haruo, to Unitika Ltd. Fire-retardant resin composition. 4,254,242, Cl. 525-425.000.
Laauwe, Robert H., to Essex Chemical Corporation. Dispensing spray nozzle. 4,253,609, Cl. 239-327.000.
Laboratoire Debat: *See*—
Debat, Jacques; Lemoine, Jean; and Lier nee Gabillault, Francoise, 4,254,112, Cl. 424-195.000.
LaFever, Clifford E.: *See*—
Washburn, William J.; LaFever, Clifford E.; and Thompson, Hugh B., 4,253,376, Cl. 89-33.0BB.
Lafosse, Claude: *See*—
Blaive, Daniel; and Lafosse, Claude, 4,253,695, Cl. 294-95.000.
Lamb, W. Doyle; and Luckenbill, Lawrence F., to A. W. Cash Valve Manufacturing Corporation. Thermal element. 4,253,304, Cl. 60-527.000.
Lambert Brake Corporation: *See*—
Wolf, Peter; and Williams, Kenneth L., 4,253,496, Cl. 137-862.000.
Land, Robert P., to Dynamic Sciences International, Inc. Strap-down attitude and heading reference system. 4,254,465, Cl. 364-453.000.
Landa, Benzion, to Savin Corporation. Apparatus for collating or otherwise sorting the output of sheet-delivering devices. 4,253,656, Cl. 271-293.000.
Landheer, Dolf; Hwang, Shy-Shung; Nesta, Charles; and Squassoni, Gino F., to Xerox Corporation. Electrostatic recording apparatus. 4,254,424, Cl. 346-139.00C.
Landoll, Leo M.; and Ropp, Walter S., to Hercules Incorporated. Process for producing spherical particles or crystalline polymers. 4,254,207, Cl. 430-137.000.
Landow, Walter, to Clark Control, Inc. Electrical switching apparatus. 4,254,316, Cl. 200-308.000.
Lane, Don W. Screwdriver accessory. 4,253,357, Cl. 81-180.00R.
Lang, Siegfried: *See*—
Straub, Ferdinand; Schenck, Hans-Uwe; Lang, Siegfried; and Brode, Egon, 4,254,239, Cl. 525-123.000.
Lanier Business Products, Inc.: *See*—
Plunkett, Luther C., Jr., 4,254,307, Cl. 369-26.000.
Larkin, Joe M. Abrasive blast nozzle. 4,253,610, Cl. 239-430.000.
Larkin, William A.: *See*—
Dworkin, Robert D.; and Larkin, William A., 4,254,017, Cl. 260-45.75S.
Larson, Arnold. Burner for combusting particulate fuels. 4,253,407, Cl. 110-267.000.
Larson, William M; Pearson, Charles J.; and Rogers, Thomas H., to Goodyear Tire & Rubber Company, The. Cast tire and method of manufacture. 4,253,513, Cl. 152-354.00R.
Larsson, Bertil S. V.; and Bokfors, Stefan A. J., to AB Svenska Flaktfabriken. Plant for cooling heated goods. 4,253,314, Cl. 62-332.000.
LaSalle Machine Tool, Inc.: *See*—
Myers, Douglas; and Vandenkieboom, John, 4,253,559, Cl. 198-345.000.
Laurel Bank Machine Co., Ltd.: *See*—
Nishimoto, Seiya, 4,253,655, Cl. 271-216.000.
Laurent, Andre. Extendable cane. 4,253,479, Cl. 135-69.000.
Laurie, John S. Utilization of high sulphur fuels without air pollution. 4,253,926, Cl. 204-157.10R.
Laux, Walter; Zettel, Martin; and Ambrosius, Erich, to Didier-Werke AG. Relief brickwork over opening in refractory brick wall. 4,253,410, Cl. 110-331.000.
La Via, Anthony L.: *See*—
Chen, James L.; Cilento, Rudolfo D.; Hill, John A.; and La Via, Anthony L., 4,253,460, Cl. 128-283.000.
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., to Mobil Oil Corporation. Aqueous lubricants containing metal hydrocarbyl dithiophosphates. 4,253,975, Cl. 252-32.70E.
Lawrence, John P.: *See*—
Chung, Daniel A.; and Lawrence, John P., 4,254,272, Cl. 560-19.000.
Lawson, Dale W. R.: *See*—
Beggs, Stanley L.; Riel, Frank J.; and Lawson, Dale W. R., 4,254,171, Cl. 428-116.000.
Lawson, William J. Controlled buoyancy separator apparatus and method. 4,253,941, Cl. 209-17.000.
Lawton, Ernest L., to Monsanto Company. Acrylic fiber and the method for making the same. 4,254,233, Cl. 525-123.000.
LeBegue, Maurice K., to National Mine Service Company. Continuous mining machine having a boom member with a fixed material dislodging means. 4,253,705, Cl. 299-76.000.
Lebesgue, Yves; and Miglioretti, Frederic, to Omnium d'Assainissement; and Argiles & Minereaux. Process for biological denitrification of waters. 4,253,966, Cl. 210-610.000.
Leclerc, Stanislas. Invalid walker. 4,253,678, Cl. 280-42.000.
Lecolier, Serge L.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Lecolier, Serge L.; and Raynal, Serge F., 4,254,247, Cl. 526-180.000.
Lecomte, Claude; and Fleury, Daniel, to Ateliers et Chantiers de Bretagne ACB. Method of positioning a flare support structure for a petroleum platform. 4,253,780, Cl. 405-202.000.
Lee, Cheuk M., to Abbott Laboratories. 5H-[1]Benzopyrano[3,4-d]pyridines. 4,254,116, Cl. 424-246.000.
Lee, Jae-Do: *See*—
Cochran, Joe K., Jr.; Lee, Jae-Do; and Chapman, Alan T., 4,253,221, Cl. 29-25.180.
Lee, Lawrence L., to Magnavox Government and Industrial Electronics Co. Surface treating a portion of small articles. 4,253,909, Cl. 156-654.000.
Lee, Lester T. C.: *See*—
Dege, Gerald J.; Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, 4,253,900, Cl. 156-309.300.
Lee, Shu-Tso. Electronic time piece. 4,254,487, Cl. 368-29.000.
Leggett & Platt, Incorporated: *See*—
Mikos, Aloysius J., 4,253,205, Cl. 5-13.000.
Legille, Edouard, to Paul Wurth, S.A. Valve for opening and closing a fluid conduit. 4,253,485, Cl. 137-315.000.
Legrand, Pierre: *See*—
Roullet, Gilbert; and Legrand, Pierre, 4,254,170, Cl. 428-36.000.
Lehmann, Wolfgang: *See*—
Lobach, Wilfried; Lehmann, Wolfgang; and Muller, Friedhelm, 4,254,255, Cl. 528-312.000.
Lehmbeck, Steven. Nebulizer attachment. 4,253,468, Cl. 128-726.000.
Lehr, Werner, to Bayerische Motoren Werke Aktiengesellschaft. Lock for safety belts in vehicles. 4,253,702, Cl. 297-468.000.
Leistritz Maschinenfabrik, Paul Leistritz GmbH: *See*—
Munster, Heinrich, 4,253,345, Cl. 74-665.0GA.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Mason, David M., 4,253,925, Cl. 204-129.000.
Leike, Helmut, to Raytheon Company. Variable size character generator. 4,254,416, Cl. 340-728.000.
Lemay, Richard A.: *See*—
Raymond, James C.; Lemay, Richard A.; and Kelly, Richard P., 4,254,462, Cl. 364-200.000.
Lemburg, Jorn-Uwe; and Stolley, Dieter, to E. C. H. Will (GmbH & Co.). Apparatus for severing and deforming the ends of helical binders for pads or the like. 4,253,499, Cl. 140-92.700.
Lemoine, Jean: *See*—
Debat, Jacques; Lemoine, Jean; and Lier nee Gabillault, Francoise, 4,254,112, Cl. 424-195.000.
Lenhart, Ronald A., to Precision Metal Fabricators, Inc. Air operated conveyor apparatus. 4,253,783, Cl. 406-86.000.
Lenoir, John: *See*—
Kramp, Ekkehard; Lenoir, John; and Marthaler, Max, 4,254,215, Cl. 430-419.000.
Leonard, Donald J., to Chevron Research Company. Natural draft combustion zone optimizing method and apparatus. 4,253,404, Cl. 110-188.000.
Le Page, Jean-Francois: *See*—
Juguin, Bernard; Franck, Jean-Pierre; Le Page, Jean-Francois; and de Gaudemaris, Gabriel, 4,254,294, Cl. 585-525.000.
Lerchenmueller, Werner: *See*—
Cronson, Harry M.; Ross, Gerald F.; Rao, Basrur R.; Lerchenmueller, Werner; and Drew, Prentis B., 4,254,418, Cl. 343-112.0CA.
Leslie, Donald J.; and Sharp, Paul H., to Marmon Company. Universal pulsato unit. 4,253,368, Cl. 84-1.240.
Lester, William M.; Brown, Edward M.; and Towns, Edward J., to Lester, William Morris. Dispensing closure with disc-like membrane valve member. 4,253,588, Cl. 222-153.000.
Lester, William Morris: *See*—
Lester, William M.; Brown, Edward M.; and Towns, Edward J., 4,253,588, Cl. 222-153.000.
Letertre, Gerard J.: *See*—
Gittos, Maurice W.; and Letertre, Gerard J., 4,254,284, Cl. 562-574.000.
Letraset USA Inc.: *See*—
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., 4,254,211, Cl. 430-325.000.
Leuvering, Johannes H. W.: *See*—
Schuurs, Antonius H. W. M.; and Leuvering, Johannes H. W., 4,254,223, Cl. 435-296.000.
Leverberg, Siegfried, to Hydrotechnik GmbH. Retainer for threaded coupling elements. 4,253,488, Cl. 137-382.000.
Levin, Igor A. Method and apparatus for disintegrating a material. 4,253,704, Cl. 299-14.000.

Levy, Donald J., to Lockheed Missiles & Space Company, Inc. Product recovery from alkali metal wastes. 4,254,089, Cl. 423-179.000.

Lewis, James P.; and Carroll, James C., to International Telephone and Telegraph Corporation. Control apparatus for a transceiver employing a programmable memory. 4,254,504, Cl. 455-76.000.

Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., to Studiecentrum voor Kernenergie, S.C.K. Method of preparing a membrane consisting of polyantimonic acid powder and an organic binder. 4,253,936, Cl. 204-296.000.

Liberman, Salomon: *See*—
Eriksson, Leif; and Liberman, Salomon, 4,254,444, Cl. 361-82.000.

Libertini, Zoltan L., to Avco Corporation. Centrifugal oil filter. 4,253,953, Cl. 210-168.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Beneking, Heinz, 4,254,430, Cl. 357-22.000.

Liebowitz, Marvin: *See*—
Hendrickson, Thomas C.; and Liebowitz, Marvin, 4,254,139, Cl. 428-283.000.

Lier nee Gabillault, Francoise: *See*—
Debat, Jacques; Lemoine, Jean; and Lier nee Gabillault, Francoise, 4,254,112, Cl. 424-195.000.

Liljequist, Jon L. Engines, and particularly those incorporating the Stirling cycle. 4,253,303, Cl. 60-517.000.

Lim, John; and Haney, Ralph M., to Filtrol Corporation. Zeolitic catalyst and method of producing same. 4,253,989, Cl. 252-455.00Z.

Limet, Joseph; Cambiaso, Cesar L.; Moussebois, Claude H.; and Masson, Pierre L., to Technicon Instruments Corporation. Insolubilized proteins and immunoassays utilizing them. 4,253,844, Cl. 23-230.00B.

Linkous, Clifford G. Tractor-trailer mirror device. 4,253,738, Cl. 350-304.000.

Lion Dentifrice Co., Ltd., The: *See*—
Fukuda, Hidenori, 4,254,105, Cl. 424-170.000.

Lipes, Arnold. Automatic weighing and bagging machine. 4,253,292, Cl. 53-502.000.

Lipov, Jury N.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.

Lippmaa, Endel T.; Alla, Madis A.; Salumyae, Ants A.; and Tukherm, Tiit A. Sensor for generating nuclear magnetic resonance signals. 4,254,373, Cl. 324-321.000.

Liu, Chain-Tsuan; Inouye, Henry; Schaffhauser, Anthony C.; and White, Calvin L., to United States of America, Energy. Thorium doped iridium alloy for radioisotope heat sources. 4,253,872, Cl. 75-172.00R.

Liu, Kang-Jen: *See*—
Dege, Gerald J.; Chlanda, Frederick P.; Lee, Lester T. C.; and Liu, Kang-Jen, 4,253,900, Cl. 156-309.300.

Liu, William Y. Pet litter remover and bagger. 4,253,691, Cl. 294-1.0BA.

Lobach, Wilfried; Lehmann, Wolfgang; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Aqueous reaction of polyamine with alkylene dihalide in presence of emulsifier. 4,254,255, Cl. 528-312.000.

Lockhart, Steven A.: *See*—
Sauer, Henry; and Lockhart, Steven A., 4,253,505, Cl. 141-147.000.

Lockheed Missiles & Space Company, Inc.: *See*—
Levy, Donald J., 4,254,089, Cl. 423-179.000.

Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, to Monterey Abalone Farms. Abalone mariculture. 4,253,418, Cl. 119-2.000.

Loewe, Heinz; Urbanietz, Josef; Duwel, Dieter; and Kirsch, Reinhard, to Hoechst Aktiengesellschaft. Monocarboxylates of phenylguanidinesulfonic acid esters, a process for their manufacture, compositions containing them and their use for combating helminths. 4,254,143, Cl. 424-300.000.

Loewenthal, Horst, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for inserting finned packages into containers. 4,253,293, Cl. 53-537.000.

Logan, Maurus C.; Cole, John M.; and Garner, Peter, to Thomas & Betts Corporation. Optical fiber connector. 4,253,730, Cl. 350-96.210.

Lohay, James R.: *See*—
Friedericy, Johan A.; Mueller, Gary F.; and Lohay, James R., 4,253,520, Cl. 165-166.000.

Lohr, David A.: *See*—
Achter, Eugene K.; Lohr, David A.; and Uffer, Michael B., 4,254,460, Cl. 364-104.000.

Lohstroh, Jan, to U.S. Philips Corporation. Semiconductor device having a compact read-only memory. 4,254,427, Cl. 357-13.000.

Long, Jerry M.; and Womack, James A., to Innovative Concepts, Inc. Video cassette container. 4,253,568, Cl. 206-387.000.

Long, Robert B., to Exxon Research & Engineering Co. Coal liquefaction process. 4,253,937, Cl. 208-8.0LE.

Lord Corporation: *See*—
Howard, Dennis D., 4,254,230, Cl. 525-28.000.

Lordier, Edgar T. Illuminated display for house number or the like. 4,254,457, Cl. 362-367.000.

Lotte Co., Ltd.: *See*—
Ogawa, Koichi; Tezuka, Shichigoro; Maruyama, Takashi; and Kiyokawa, Kazuo, 4,254,148, Cl. 426-3.000.

Lotter, William H., Jr.: *See*—
Powers, William R.; and Lotter, William H., Jr., 4,253,452, Cl. 128-152.000.

Loughman, Barbara E.: *See*—
Anderson, David J.; and Loughman, Barbara E., 4,254,142, Cl. 424-300.000.

Lovrekovic, Steven N.; and Bowers, Harry J., Jr., to General Electric Company. Rapidly formed electrical connection. 4,253,233, Cl. 29-857.000.

Lu, Chin H.; and Erhardt, Peter F., to Xerox Corporation. Positive toners containing alkyl picolinium compounds as charge control agents. 4,254,205, Cl. 430-122.000.

Lubrizol Corporation, The: *See*—
Forsberg, John W., 4,253,976, Cl. 252-33.000.
Schroeck, Calvin W., 4,254,257, Cl. 536-52.000.

Lucas Industries Limited: *See*—
Glikin, Paul E., 4,253,802, Cl. 417-199.00A.

Lucero, Joe H.: *See*—
Brooks, Ray; and Lucero, Joe H., 4,253,851, Cl. 55-90.000.

Luchi, Vinicio. Travelling wave shedding looms relative to the shuttle loading system. 4,253,498, Cl. 139-224.00R.

Luckenbill, Lawrence F.: *See*—
Lamb, W. Doyle; and Luckenbill, Lawrence F., 4,253,304, Cl. 60-527.000.

Ludwig, Louis. Cleaning attachment for grain augers. 4,253,946, Cl. 209-283.000.

Lunden, Sidney L.; and Ulrich, Robert E. Lumber stacking apparatus. 4,253,787, Cl. 414-42.000.

Luther, Ronald B.: *See*—
Streczyn, Michael V.; Luther, Ronald B.; and Doyle, Daniel L., 4,254,081, Cl. 422-46.000.

Luthi, Rudolf: *See*—
Bloeck, Siegfried; and Luthi, Rudolf, 4,253,584, Cl. 220-359.000.

Lynch, Brian, to Western Electric Company, Inc. Closure for container. 4,253,583, Cl. 220-319.000.

Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., to Olin Corporation. Electrolytic process for producing potassium hydroxide. 4,253,923, Cl. 204-98.000.

Lynn, William F.; and Walker, Gordon M., to Boeing Company, The. Sealed lined bearing. 4,253,711, Cl. 308-36.100.

M&T Chemicals Inc.: *See*—
Dworkin, Robert D.; and Larkin, William A., 4,254,017, Cl. 260-45.75S.

Maas, Rudolf J.: *See*—
Blytas, George C.; Maas, Rudolf J.; van Aken, Andreas B.; and van Schalkwijk, Christiaan, 4,253,928, Cl. 204-180.00P.

Mabuchi Motor Co., Ltd.: *See*—
Matsuda, Shinich, 4,254,353, Cl. 310-239.000.

Maccherone, Lawrence S.: *See*—
D'Angelo, Joseph J.; and Maccherone, Lawrence S., 4,253,892, Cl. 156-84.000.

Macfarlane, Elmer P. Garment hanger. 4,253,577, Cl. 211-118.000.

Mackal, Glenn H.; and Judd, Edward A. Apparatus for heading plastic safety pins for inflation manifolds. 4,253,812, Cl. 425-157.000.

MacLeod, Norman A.; and Webb, Charles P. N. Water treatment. 4,253,971, Cl. 210-759.000.

Madaliev, Shavkat; Varlamov, Gennady D.; Bekbulatov, Ildgam A.; and Mamatov, Juldash. Method for preparing furan-epoxy powder-like binder. 4,254,245, Cl. 525-529.000.

Maeda, Hidetoshi, to Sharp Kabushiki Kaisha. Accuracy correction in an electronic timepiece. 4,254,494, Cl. 368-187.000.

Maeda, Hiroaki: *See*—
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,253,347, Cl. 74-862.000.

Maeda, Katsura: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.

Maeda, Kenji; Iwanami, Yoshiyuki; and Fukumoto, Masaru, to Japan Steel Works, Ltd., The. Molten steel droplet scatter regulation cylinder. 4,253,645, Cl. 266-211.000.

Maes, Michel E. Two-component explosive composition. 4,253,889, Cl. 149-47.000.

Maezono, Masakazu: *See*—
Yamada, Yoji; Nishimura, Sadanori; Shimizu, Takeyuki; and Maezono, Masakazu, 4,253,553, Cl. 192-3.620.

Magarian, Gerald M., to Ameron, Inc. Delivering roving for fabrication of plastic pipe. 4.253,894, Cl. 156-175.000.

Magnavox Government and Industrial Electronics Co.: *See*—
Lee, Lawrence L., 4,253,909, Cl. 156-654.000.

Magneville, Pierre, to Institut Francais du Petrole. Device for generating acoustic waves in a fluid by implosion. 4,253,539, Cl. 181-120.000.

Maher, George G., to United States of America, Agriculture. Flocculation of coals with water-soluble starch xanthates. 4,253,970, Cl. 210-731.000.

Mahle, Christoph E.: *See*—
Childs, William H.; and Mahle, Christoph E., 4,254,385, Cl. 333-104.000.

Mahoney, Thomas P.: *See*—
Campbell, James R.; and Anspach, Roy L., 4,254,188, Cl. 428-594.000.

Maida, Osamu, to Nippon Kogaku K.K. Power supply control apparatus for camera. 4,253,750, Cl. 354-23.00D.

Maitenaz, Bernard, to Essilor International (Compagnie Generale d'Optique). Method of preparing a refractive surface of a progressively variable focal power ophthalmic lens. 4,253,747, Cl. 351-169.000.

Makimoto, Mitsuo: *See*—
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,254,390, Cl. 334-85.000.

Mallard Manufacturing Corporation: *See—*
Roeing, Richard S.; and Defoe, Richard A., 4,253,558, Cl. 193-35.00A.

Maloney, Thomas C.: *See—*
Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., 4,254,361, Cl. 313-519.000.

Malpass, Robert C.: *See—*
Illman, Walter F.; Conklin, Delano M.; Karnes, Clifton H., Jr.; and Malpass, Robert C., 4,253,840, Cl. 8-115.600.

Malvezzi, Andrea M.: *See—*
Tondello, Giuseppe; and Malvezzi, Andrea M., 4,254,335, Cl. 250-277.00R.

Mamatov, Juldash: *See—*
Madaliev, Shavkat; Varlamov, Gennady D.; Bekbu'atov, Ildgam A.; and Mamatov, Juldash, 4,254,245, Cl. 525-529.000.

Mamiya Koki Kabushiki Kaisha: *See—*
Ishihara, Satoshi, 4,253,754, Cl. 354-154.000.

Manara, Giovanni; Fattore, Vittorio; Taramasso, Marco; and Notari, Bruno, to Snamprogetti S.p.A. Process for the preparation of tertiary olefins. 4,254,296, Cl. 585-640.000.

Mangialardi, Gino J., Jr., to United States of America, Agriculture. Lint cleaning apparatus for automatic control of cotton quality. 4,253,215, Cl. 19-66.0CC.

Manning, Ralph M.: *See—*
Kirchoff, Francis D.; and Manning, Ralph M., 4,254,310, Cl. 200-6.00R.

Mannion, A. Joel: *See—*
Cooney, Joseph J.; and Mannion, A. Joel, 4,254,475, Cl. 364-900.000.

Manson, J. A.: *See—*
Sperling, L. H.; Manson, J. A.; and Devia-Manjarres, N., 4,254,002, Cl. 260-23.0ST.

Maples, John H., to Whiting Oilfield Rental, Inc. Pipe connection. 4,253,687, Cl. 285-332.300.

Marchal, Paul, to Air Industrie. Installations for the treatment of strip material in a gaseous medium. 4,253,246, Cl. 34-121.000.

Marcyan, Stanley T. Bed supportable patient helper. 4,253,207, Cl. 5-84.000.

Marek, Albert J., to United States of America, Navy. Automatic parachute release system. 4,253,628, Cl. 244-151.00A.

Marino, Frank, to Wooster Brush Company, The. Paint brush. 4,253,213, Cl. 15-192.000.

Marinov, Marin I.: *See—*
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.

Markley, Lowell D., to Dow Chemical Company, The. Substituted benzonitriles having antiviral activity. 4,254,144, Cl. 424-304.000.

Markowski, Kazimierz; Truszkowski, Jacek; Niedzielski, Wojciech; and Slomkowski, Jaroslaw, to Przedsiebiorstwo Wdrazania I Upowszechniania Postepu Technicznego I Organizacyjnego Posteor Oddzia W Gdansku. Device for the determination of a ship in dock at the time of docking. 4,254,484, Cl. 367-115.000.

Marley-Wylain Company, The: *See—*
Philipps, Donald F.; and Williamson, Richard D., 4,253,796, Cl. 415-157.000.

Marlowe, Edward: *See—*
Kaplan, Carl; Marlowe, Edward; and Sayre, Robert M., 4,254,102, Cl. 424-59.000.

Marmo, Don; and Rocco, Frank L., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma or taste of smoking tobacco or a smoking tobacco article by adding thereto a suspended flavoring composition. 4,253,473, Cl. 131-2.000.

Marmon Company: *See—*
Leslie, Donald J.; and Sharp, Paul H., 4,253,368, Cl. 84-1.240.

Marsh, Geoffrey D., to Courtaulds Limited. Drying wood pulp. 4,253,822, Cl. 432-14.000.

Marshall, John M.; Veslocki, Timothy A.; and Sulicz, James J., to Inland Steel Company. Fluid closure for and method of preventing flow through an opening in a fluid and particulate confining and conveying structure. 4,253,644, Cl. 266-44.000.

Marthaler, Max: *See—*
Kramp, Ekkehard; Lenoir, John; and Marthaler, Max, 4,254,215, Cl. 430-419.000.

Martin Concrete Engineering Company: *See—*
Stinton, Frederick M.; and Weikert, William C., 4,253,817, Cl. 425-447.000.

Martin, David W., to Bell Telephone Laboratories, Incorporated. Magnetic tape head alignment. 4,254,440, Cl. 360-76.000.

Martin, Luther W.; and Smith, Richard L. Live gas main insertion tools. 4,253,497, Cl. 138-97.000.

Martinez-Vera, Enrique R.: *See—*
Price-Falcon, Juan F.; and Martinez-Vera, Enrique R., 4,253,867, Cl. 75-35.000.

Martinmaas, Werner W. Socket wrench with interchangeable sockets stored in handle. 4,253,356, Cl. 81-177.00N.

Martyniak, Gerald J., to Western Electric Company, Inc. Techniques for assembling electrical components with printed circuit boards. 4,254,448, Cl. 361-409.000.

Maruyama, Takashi: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Maruyama, Takashi; and Kiyokawa, Kazuo, 4,254,148, Cl. 426-3.000.

Marvin Glass & Associates: *See—*
Ferris, Michael J.; and Meyer, Burton C., 4,253,669, Cl. 273-368.000.

Marwick, William F. G.: *See—*
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., 4,254,211, Cl. 430-325.000.

Marzocchi, Lorenzo, to Garmont S.p.A. Lacing system for ski boots. 4,253,217, Cl. 24-69.0SK.

Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See—*
Brussel, Richard, 4,253,891, Cl. 156-60.000.

Masegi, Koichi: *See—*
Kawamura, Naoto; Masegi, Koichi; and Hakamada, Isao, 4,253,735, Cl. 350-409.000.

Mashburn, Douglas N.; and Akerman, M. Alfred, to United States of America, Energy. Laser pulse detector. 4,254,332, Cl. 250-211.00R.

Mason, David M., to Leland Stanford Junior University, The Board of Trustees of the. Method and apparatus for catalytic dissociation of NO. 4,253,925, Cl. 204-129.000.

Mason, Robert C.; and Scerbo, Joseph, to Colonial Mirror & Glass Corp. Ornamental mirror and apparatus and method for making same. 4,253,910, Cl. 156-633.000.

Massachusetts Institute of Technology: *See—*
Flanders, Dale C.; Smith, Henry I.; and DaLomba, Muriel A., 4,254,174, Cl. 428-209.000.

Massaroli, Giangiacomo, to POLI Industria Chimica S.p.A. 4-Carbethoxy-carbonilamino-pyrimidines and a process for their preparation. 4,254,126, Cl. 424-251.000.

Masson, Pierre L.: *See—*
Limet, Joseph; Cambiaso, Cesar L.; Moussebois, Claude H.; and Masson, Pierre L., 4,253,844, Cl. 23-230.00B.

Massucco, Arthur A.: *See—*
Merrill, Richard E.; and Massucco, Arthur A., 4,254,194, Cl. 430-11.000.

Master Specialties Company: *See—*
Stevens, Curtis R., 4,254,315, Cl. 200-153.00J.

Masuda, Kosaku; Wada, Hajime; and Yamashita, Kiyoshi, to Konishiroku Photo Industry Co., Ltd. Process for forming black dye images. 4,254,213, Cl. 430-381.000.

Masuda, Toshiyuki; and Sasaki, Takehiko, to Sharp Kabushiki Kaisha. Display panel for electronic timepiece. 4,254,486, Cl. 368-29.000.

Masugi, Takashi: *See—*
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,117, Cl. 424-246.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,260, Cl. 544-27.000.

Matra: *See—*
Minesi, Didier, 4,253,518, Cl. 165-105.000.

Matson, Wayne R.; and Vitukevich, Ronald, to Environmental Sciences Associates, Inc. Preparing sample for electrochemical testing system. 4,253,847, Cl. 23-230.00R.

Matsubara, Noboru: *See—*
Takizawa, Masaaki; and Matsubara, Noboru, 4,253,434, Cl. 123-90.150.

Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Tire pressure drop alarming apparatus. 4,254,398, Cl. 340-58.000.

Matsuda, Shinich, to Mabuchi Motor Co., Ltd. Brush holder. 4,254,353, Cl. 310-239.000.

Matsui, Hideaki: *See—*
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, 4,253,432, Cl. 123-52.00M.

Matsui, Toshikazu: *See—*
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,254,202, Cl. 430-120.000.

Matsumoto, Kenji: *See—*
Takeda, Keizi; Matsumoto, Kenji; and Nagata, Masayoshi, 4,254,214, Cl. 430-415.000.

Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Electrostatic copying process. 4,254,202, Cl. 430-120.000.

Matsumura, Isao, to Canon Kabushiki Kaisha. Eye testing instrument. 4,253,743, Cl. 351-7.000.

Matsuo, Jon T., to United States of America, Navy. Multi-layer ram air parachute canopy. 4,253,627, Cl. 244-145.000.

Matsuo, Kazunori: *See—*
Yamazaki, Yasuhiro; Wakahara, Yasushi; and Matsuo, Kazunori, 4,254,438, Cl. 358-261.000.

Matsuoka, Hideoki, to Nissan Motor Company, Limited. Meter system for indicating a plurality of variables with a single meter. 4,254,375, Cl. 324-115.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kikuchi, Kazuya, 4,253,888, Cl. 148-187.000.
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,254,390, Cl. 334-85.000.
Yamagami, Akio; and Kubota, Tadashi, 4,253,291, Cl. 53-399.000.

Matsutani, Kazuhito: *See—*
Kimura, Hiroshi; Matsutani, Kazuhito; and Tsutsumi, Shunichi, 4,254,060, Cl. 564-479.000.

Matsuzaka, Eiichi: *See—*
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, 4,254,292, Cl. 585-320.000.

Maturo, Robert J.: *See—*
Henderson, John G. N.; and Maturo, Robert J., 4,254,506, Cl. 455-158.000.

Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating

arthropods with O-Alkyl-O-(2-cyclopropyl-6-methyl-pyrimidin-4-yl)-thionophosphonic acid esters. 4,254,113, Cl. 424-200.000.
Maurer, Gernant E.; and Boesch, William J., to Special Metals Corporation. Treating nickel base alloys. 4,253,884, Cl. 148-13.100.
Maurer, Gernant E.; and Boesch, William J., to Special Metals Corporation. Treating nickel base alloys. 4,253,885, Cl. 148-13.100.
May, John C. Extensible trailer section room. 4,253,283, Cl. 52-67.000.
Mayr, August A. Playtoy building block set. 4,253,268, Cl. 46-30.000.
Maza, Dale T.; Tomblin, Glen E.; and Ruckman, Harold, to Rubbermaid Commercial Products Inc. Self-standing floor sign. 4,253,260, Cl. 40-610.000.
McCandless, James C., to International Harvester Company. Diesel engine and piston assembly therefor. 4,253,435, Cl. 123-193.00P.
McConnell, David P.; and Tully, Louis E., to McConnell, David P. Rotary manifold valve mechanism. 4,253,380, Cl. 91-503.000.
McCormick, Arnold J. Ornamental shoe heel device. 4,253,253, Cl. 36-137.000.
McCune, Homer W., to Procter & Gamble Company, The. Method of reducing aerosolization of wastewater. 4,253,951, Cl. 210-749.000.
McDermott, Thomas C., III, to Rockwell International Corporation. Redundant clock system utilizing nonsynchronous oscillators. 4,254,492, Cl. 368-119.000.
McDonald, Harold P. Urological endoscopic irrigation system. 4,253,457, Cl. 128-227.000.
McDonald, Hugh C.; Odstrchel, Gerald; and Takeguchi, Milton M., to Corning Glass Works. Detecting Neisseria via immobilized antibody-enzyme complex. 4,254,218, Cl. 435-7.000.
McDonald, Ray S.: *See*—
Hartlaub, Jerome T.; McDonald, Ray S.; and Shearon, Lawrence W., 4,253,466, Cl. 128-419.0PG.
McDonald, William V., to Bates Container Corporation, a part interest. Corrugating machine with air pressure cleaning device for glue roller grooves. 4,253,903, Cl. 156-389.000.
McDonnell Douglas Corporation: *See*—
Hsia, Yukun; and Wishneusky, John A., 4,254,477, Cl. 365-200.000.
Meares, Lawrence G., 4,254,406, Cl. 340-347.0NT.
McDowell, William J.; and Seeley, Forest G., to United States of America, Energy. Salt-soda sinter process for recovering aluminum from fly ash. 4,254,088, Cl. 423-112.000.
McEwen, Gerald K.; and Thomas, Lowell S., to Dow Chemical Company, The. Polycarbonate containing a bis(cyclic phosphite) as a thermal stabilizer. 4,254,014, Cl. 260-45.7PH.
McGarry, Phillip E.; and Pacic, Zoran, to New Jersey Zinc Company, The. Flotation of non-sulfide zinc materials. 4,253,614, Cl. 241-24.000.
McGinley, William J., to Methode Electronics, Inc. Electrical edge connector. 4,253,719, Cl. 339-61.00M.
McGowan, Robert J.: *See*—
Dubberly, Gregory T.; McGowan, Robert J.; and Butcher, Larry R., 4,253,573, Cl. 209-525.000.
McInerney, Terrance M. Digital angle indicator. 4,253,242, Cl. 33-366.000.
McInerny, George P.; and Parker, Aaron F., to Technitrol, Inc. Document interleaver device. 4,253,651, Cl. 270-58.000.
McKee, Donald S., to Scott & Fetzer Company. Spring latch mechanism. 4,253,689, Cl. 292-338.000.
McLaughlin, Donald W.: *See*—
Funderburk, Tim; and McLaughlin, Donald W., 4,254,497, Cl. 370-62.000.
McMillan, Andrew H., to Burroughs Corporation. Multiplexed incremental position controller. 4,254,342, Cl. 250-561.000.
McMinn, Talmage D., Jr., to Monsanto Company. Ammonia synthesis gas production. 4,253,986, Cl. 252-373.000.
McQueen, Sylvester. Water wheel with level compensating buckets. 4,253,795, Cl. 415-125.000.
McWhirt, Bobby D.: *See*—
Schmitt, Raymond F.; Gaeddert, Melvin V.; and McWhirt, Bobby D., 4,253,387, Cl. 100-5.000.
Mead Corporation, The: *See*—
Dubberly, Gregory T.; McGowan, Robert J.; and Butcher, Larry R., 4,253,573, Cl. 209-525.000.
Mead Johnson & Company: *See*—
Morrow, Duane F., 4,254,124, Cl. 424-250.000.
Meares, Lawrence G., to McDonnell Douglas Corporation. Integrating analog-to-digital converter. 4,254,406, Cl. 340-347.0NT.
Mechanical Technology Incorporated: *See*—
Bhushan, Bharat, 4,253,714, Cl. 308-238.000.
Dorman, Richard A.; and Kissinger, Curtis D., 4,254,331, Cl. 250-205.000.
Medical Evaluation Devices & Instruments Corp.: *See*—
Kline, William M., 4,254,180, Cl. 428-323.000.
Medtronic, Inc.: *See*—
Dutcher, Robert G.; O'Neill, Edward G.; and Sandstrom, Richard D., 4,253,462, Cl. 128-303.00R.
Hartlaub, Jerome T.; McDonald, Ray S.; and Shearon, Lawrence W., 4,253,466, Cl. 128-419.0PG.
Meeks, Charles H. Adjustable off-set spring loaded clamp and stand. 4,253,648, Cl. 269-4.000.
Meiattini, Franco, to Sclavo, S.p.A. Composition for the kinetic determination of glucose. 4,254,220, Cl. 435-14.000.
Mekus, Max. A.: *See*—
Graham, Joseph A., Jr.; and Hibbs, Clair R., 4,254,098, Cl. 424-14.000.
Memorex Corporation: *See*—
Fisher, Robert D., 4,254,189, Cl. 428-626.000.
Menzel, S. W. O.; and Mominee, David E., to Reed Irrigation Systems. Method for forming holes in a member. 4,254,075, Cl. 264-154.000.
Merck & Co., Inc.: *See*—
Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,254,249, Cl. 526-303.000.
Fullerton, W. Wardle, 4,254,219, Cl. 435-7.000.
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,254,131, Cl. 424-267.000.
Miller, Stewart M.; and Smith, John L., 4,254,261, Cl. 546-203.000.
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,254,224, Cl. 435-71.000.
Powell, Burwell F.; and Hirschmann, Ralph F., 4,254,273, Cl. 560-29.000.
Raab, Andrew W., 4,254,263, Cl. 546-288.000.
Veber, Daniel F.; and Freidinger, Roger M., 4,254,107, Cl. 424-177.000.
Merrell Toraude et Compagnie: *See*—
Gittos, Maurice W.; and Letertre, Gerard J., 4,254,284, Cl. 562-574.000.
Merrill, Richard E.; and Massucco, Arthur A., to Arthur D. Little, Inc. Screen printing stencils using novel compounds and compositions. 4,254,194, Cl. 430-11.000.
Meteor-Siegen Apparatebau: *See*—
Schleifenbaum, Karl, 4,253,763, Cl. 355-57.000.
Methode Electronics, Inc.: *See*—
Brown, Vincent B.; and Schreiner, Donald G., 4,253,222, Cl. 29-33.00F.
McGinley, William J., 4,253,719, Cl. 339-61.00M.
Mettig, Hermann; and Jeschar, Rudolf, to Klockner-Humboldt-Deutz Aktiengesellschaft. Reciprocating piston internal combustion engine with at least one cylinder bushing. 4,253,431, Cl. 123-41.720.
Metzdorff, Walter: *See*—
Burkhardt, Hans; Metzdorff, Walter; and Schutte, Holger, 4,254,399, Cl. 340-146.3MA.
Meunier, Robert: *See*—
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, 4,254,340, Cl. 250-492.00A.
Meyer, Burton C.: *See*—
Ferris, Michael J.; and Meyer, Burton C., 4,253,669, Cl. 273-368.000.
Meyer, Gundolf: *See*—
Horvath, Imre; Kwasnitza, Kurt; and Meyer, Gundolf, 4,254,299, Cl. 174-15.00S.
Miale, August, Jr.: *See*—
Miale, John B.; Miale, August, Jr.; and Porter, Raymond P., 4,253,877, Cl. 106-18.350.
Miale, John B.; Miale, August, Jr.; and Porter, Raymond P., to University of Miami. Anti-fouling marine paints containing microencapsulated anti-fouling agents and the process of microencapsulation. 4,253,877, Cl. 106-18.350.
Midcon Pipeline Equipment Co.: *See*—
Slavens, Clyde M., 4,253,599, Cl. 228-49.00B.
Middleburg Corporation: *See*—
Fox, Roy W., Jr., 4,253,722, Cl. 339-99.00R.
Midkiff, David G.; and Jaisinghani, Rajan A., to Nelson Industries, Inc. Two-stage spin-on separating device. 4,253,954, Cl. 210-168.000.
Midland-Ross Corporation: *See*—
Tulleners, Harry W., 4,254,362, Cl. 315-219.000.
Miglioretti, Frederic: *See*—
Lebesgue, Yves; and Miglioretti, Frederic, 4,253,966, Cl. 210-610.000.
Migrin, Robert S.; and Brown, James M., to Eaton Corporation. Temperature compensated fill valve/pressure switch. 4,254,312, Cl. 200-61.250.
Mikaelian, Georgy A.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.
Mikami, Yorihito: *See*—
Goto, Kanji; Yamaguti, Tiyomi; Mikami, Yorihito; and Komakine, Rokuro, 4,253,646, Cl. 266-281.000.
Mikos, Aloysius J., to Leggett & Platt, Incorporated. Sofa-sleeper. 4,253,205, Cl. 5-13.000.
Mikoshiba, Nobuo; Minagawa, Shoichi; and Okamoto, Takeshi, to Clarion Co., Ltd. Frequency selector apparatus. 4,254,388, Cl. 333-195.000.
Miles Laboratories, Inc.: *See*—
Schick, Lloyd A.; and Carpenter, Stephen K., 4,254,082, Cl. 422-55.000.
Miller, Charles M., Jr.; and Orlando, Samuel J., to Columbia Industries, Inc. Polymer alloy bowling ball. 4,253,665, Cl. 273-63.00G.
Miller, J. Vance. Dual load control apparatus. 4,254,343, Cl. 307-41.000.
Miller, John E., Jr.: *See*—
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., 4,254,224, Cl. 435-71.000.
Miller, Peter S., to Owens-Illinois, Inc. Closed loop positioner for a stepping motor driven by a buffered translator. 4,254,370, Cl. 318-685.000.
Miller, Robert C.: *See*—
Yaroshuk, Nicholas; Sarkozi, Miklos; Miller, Robert C.; and Kennedy, Paul G., 4,253,768, Cl. 356-431.000.
Miller, Stewart M.; and Smith, John L., to Merck & Co., Inc. Dehydroabietylammonium salts of 6-oxo-2-piperidinecarboxylic acid. 4,254,261, Cl. 546-203.000.
Milpat Corporation: *See*—
Spitz, Albert W.; and Schwab, Milton I., 4,253,406, Cl. 110-241.000.
Milzoff, Fred L.; and DeSaro, Charles, to PFC Industries, Inc. Flexible flying disc. 4,253,672, Cl. 273-424.000.

Minagawa, Shoichi: *See*—
Mikoshiba, Nobuo; Minagawa, Shoichi; and Okamoto, Takeshi, 4,254,388, Cl. 333-195.000.
Miner Enterprises, Inc.: *See*—
Fischer, Robert T.; and Shaver, William R., 4,253,400, Cl. 105-282.00P.
Minesi, Didier, to Matra. Cooling installation working through a change in phase. 4,253,518, Cl. 165-105.000.
Minnesota Mining and Manufacturing Company: *See*—
Aho, Kenneth A.; and Farrell, Francis M., III, 4,253,773, Cl. 366-247.000.
Brookhart, Marshall R., 4,254,500, Cl. 371-38.000.
Monson, Norman J., 4,254,168, Cl. 427-409.000.
Seemann, Ronald W., 4,253,566, Cl. 206-220.000.
Minolta Camera Kabushiki Kaisha: *See*—
Kato, Hitoshi; Nagai, Koji; and Kameda, Hiromi, 4,254,204, Cl. 430-122.000.
Oka, Tateki; and Tanaka, Susumu, 4,254,203, Cl. 430-120.000.
Sawa, Seiji, 4,253,744, Cl. 351-16.000.
Sekida, Minoru; Fujii, Akira; Kobori, Toshio; and Teramoto, Tougo, 4,253,755, Cl. 354-242.000.
Minoura, Kazuo; and Kitamura, Takashi, to Canon Kabushiki Kaisha. Recording optical system. 4,253,724, Cl. 350-6.800.
Minoura, Mikio: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.
Miranti, Joseph P., Jr., to Dayco Corporation. Mobius belt and method of making the same. 4,253,836, Cl. 474-200.000.
Miroshnichenko, Vitaly T.; Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A. Asynchronous line-fed motor. 4,254,350, Cl. 310-13.000.
Misaka, Eiichi: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,254,274, Cl. 560-51.000.
Mita Industrial Company, Ltd.: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,254,202, Cl. 430-120.000.
Mitaka Instrument Company Limited: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,254,398, Cl. 340-58.000.
Mitchell, Richard F.: *See*—
Redwood, Martin; Stevens, Richard; White, Philip D.; and Mitchell, Richard F., 4,254,387, Cl. 333-194.000.
Mitchell S.A.: *See*—
Beraut, Alain, 4,253,618, Cl. 242-84.10J.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Komurasaki, Satoshi; and Watanabe, Isao, 4,253,734, Cl. 350-386.000.
Nishi, Atsuyoshi; Kuwazawa, Hiroyasu; and Oshima, Kaneyoshi, 4,253,426, Cl. 122-13.00R.
Mitsubishi Paper Mills, Ltd.: *See*—
Ohashi, Minoru; and Iwaosa, Katsuaki, 4,254,217, Cl. 430-623.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Toyooka, Yasuo; Ohnishi, Kunio; Murase, Haruo; and Ueno, Tadaomi, 4,254,074, Cl. 264-132.000.
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, to Hitachi, Ltd. Process of forming photoresist layer on a glass substrate. 4,254,197, Cl. 430-28.000.
Miyake, Kentaro: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; and Miyake, Kentaro, 4,254,227, Cl. 435-97.000.
Miyamoto, Yukihiko: *See*—
Yamada, Tsuneo; and Miyamoto, Yukihiko, 4,254,346, Cl. 307-273.000.
Miyashita, Kiyoshi: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,253,760, Cl. 355-14.0CU.
Miyauchi, Masami: *See*—
Sagoi, Masayuki; Itoh, Masayuki; Miyauchi, Masami; and Watanabe, Osamu, 4,253,873, Cl. 75-175.500.
Mizelle, Ned W.: *See*—
Hancock, William L.; Kitchen, John P.; and Mizelle, Ned W., 4,253,208, Cl. 5-247.000.
Mizoguchi, Junzo: *See*—
Otani, Masaru; Saito, Tetsu; Satoi, Shuzo; Mizoguchi, Junzo; and Muto, Naoki, 4,254,256, Cl. 536-18.000.
Mizumoto, Shozo: *See*—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,253,916, Cl. 204-14.00R.
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, to Aisin Seiki Kabushiki Kaisha. Automatic speed ratio control system for stepless transmission of automotive vehicles. 4,253,347, Cl. 74-862.000.
Mizuno, Masayoshi: *See*—
Abe, Kohki; Tsuchiya, Hiroyuki; and Mizuno, Masayoshi, 4,254,209, Cl. 430-272.000.
Mizuno, Shioji; and Adachi, Tsuneyuki, to Dainippon Ink and Chemicals, Inc. Glass fiber-reinforced resin composition. 4,254,010, Cl. 260-40.0TN.
Mizuno, Shogo; and Isuii, Sumio, to Dai Nippon Printing Co., Ltd. Heat transfer printing sheet and heat transfer printing method using the same. 4,253,838, Cl. 8-471.000.
Mo och Domsjo Aktiebolag: *See*—
Hillstrom, Per A. R.; and Sondell, Kent I., 4,253,911, Cl. 162-30.00R.
Mobil Oil Corporation: *See*—
Bridger, Robert F.; and Schmitt, Kirk D., 4,253,982, Cl. 252-51.50R.
Gemmill, Robert M., Jr.; and Horodysky, Andrew G., 4,253,978, Cl. 252-32.70E.
Horodysky, Andrew G.; and Gemmill, Robert M., Jr., 4,253,973, Cl. 252-46.700.
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., 4,253,975, Cl. 252-32.70E.
Tabak, Samuel A., 4,254,295, Cl. 585-533.000.
Mock, George H., to Monsanto Company. Process for preparing adipic acid with recovery of glutaric and succinic acids. 4,254,283, Cl. 562-530.000.
Mockel, Fred. Toilet bowl cleaning apparatus. 4,253,211, Cl. 15-104.30G.
Mogaki, Katsuo: *See*—
Uchida, Takashi; Sasaki, Takashi; Kikuchi, Shoji; Mogaki, Katsuo; Taguchi, Masahiko; and Takada, Syun, 4,254,216, Cl. 430-551.000.
Molson Companies Limited, The: *See*—
Weaver, Robert L.; and Jamieson, Alastair M., 4,253,878, Cl. 106-52.000.
Mominee, David E.: *See*—
Menzel, S. W. O.; and Mominee, David E., 4,254,075, Cl. 264-154.000.
Momiyama, Kikuo, to Canon Kabushiki Kaisha. Combination lens system with attachment lens. 4,253,736, Cl. 350-422.000.
Mon, George, to United States of America, Army. Fluidic element with substantially zero null off-set. 4,253,495, Cl. 137-833.000.
Mondial Piston Dr. Galli Ercole & C.S.p.A.: *See*—
Galli, Ercole, 4,253,429, Cl. 123-41.350.
Mongeon, Ronald W., to Stellar Systems. E Field balanced phase intrusion alarm. 4,254,413, Cl. 340-561.000.
Monsanto Company: *See*—
Agrawal, Purushottam D., 4,254,079, Cl. 264-537.000.
Agrawal, Purushottam D., 4,254,080, Cl. 264-537.000.
Bromley, James E.; and Yu, Jing-Peir, 4,254,181, Cl. 428-371.000.
Burk, Raymond D., 4,254,236, Cl. 525-316.000.
Kloek, James A., 4,253,864, Cl. 71-90.000.
Lawton, Ernest L., 4,254,233, Cl. 525-123.000.
McMinn, Talmage D., Jr., 4,253,986, Cl. 252-373.000.
Mock, George H., 4,254,283, Cl. 562-530.000.
Mount, Ramon A.; and Robinson, Warn D., 4,253,988, Cl. 252-435.000.
Tolbert, William R.; and Feder, Joseph, 4,253,684, Cl. 285-13.000.
Tremont, Samuel J.; and Williamson, Alex N., 4,254,293, Cl. 585-428.000.
Williams, Louis B., Jr., 4,253,416, Cl. 118-401.000.
Monson, Norman J., to Minnesota Mining and Manufacturing Company. Chip-resistant pigmented polyurethane protective coating. 4,254,168, Cl. 427-409.000.
Montedison S.p.A.: *See*—
Caporiccio, Gerardo; Bargigia, Gianangelo; and Guidetti, Giampiero, 4,254,030, Cl. 260-543.00F.
Monterey Abalone Farms: *See*—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, 4,253,418, Cl. 119-2.000.
Monthony, James F.; Burgett, Michael W.; and Dahlstrom, Robert V., to Bio-Rad Laboratories, Inc. Reagent combination for solid phase immunofluorescent assay. 4,254,096, Cl. 424-8.000.
Mooi, John, to Atlantic Richfield Company. Catalyst and process for conversion of hydrocarbons. 4,253,939, Cl. 208-120.000.
Moore Business Forms, Inc.: *See*—
Waffner, William D., 4,253,597, Cl. 226-40.000.
Moore, Chester A., Jr., to General Motors Corporation. Series pass voltage regulator with overcurrent protection. 4,254,372, Cl. 323-277.000.
Moore, William C.; Newman, Richard W.; and Danna, Dominick, to Welch Allyn, Inc. Color endoscope with charge coupled device and television viewing. 4,253,447, Cl. 128-6.000.
Moretto, Hans-Heinrich: *See*—
Finke, Ulrich; and Moretto, Hans-Heinrich, 4,254,271, Cl. 556-479.000.
Morgan, Walter W.: *See*—
Cole, Michael A.; and Morgan, Walter W., 4,253,289, Cl. 53-53.000.
Mori, Fumio: *See*—
Doi, Koichi; Mori, Fumio; Ichinose, Isao; Ogimoto, Tetsuomi; and Kitakawa, Katsuhiko, 4,253,580, Cl. 215-228.000.
Moriarty, William L.: *See*—
Fletcher, Augustus; and Moriarty, William L., 4,253,920, Cl. 204-43.00G.
Morisaki, Masuo: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida, Jun-ichi, 4,254,045, Cl. 260-397.200.
Morisawa, Matsuo: *See*—
Yodogawa, Masatada; Morisawa, Matsuo; Yamamoto, Takashi; and Okutani, Katsunobu, 4,254,070, Cl. 264-61.000.
Morisawa, Tahei: *See*—
Kurei, Hiroshi; and Morisawa, Tahei, 4,253,756, Cl. 354-289.000.
Morita, Hiroshi, to Toshiba Corporation. Electrochromic display cell. 4,253,742, Cl. 350-357.000.
Morrill, Ralph A. Solar energy metering and recording system. 4,253,764, Cl. 356-225.000.

Morris, Dan H.: *See—*
Stewart, John M; and Morris, Dan H., 4,254,023, Cl. 260-112.50R.
Stewart, John M.; Morris, Dan H.; and Chipkin, Richard E., 4,254,024, Cl. 260-112.50R.
Morris, Hugh C.: *See—*
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,253,555, Cl. 192-13.00R.
Morrison, Donald R. Winch apparatus for vibrating concrete screed. 4,253,778, Cl. 404-114.000.
Morrison, Ian D.: *See—*
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,912, Cl. 162-76.000.
Becker, Larry W.; Davis, Philip S.; and Morrison, Ian D., 4,253,969, Cl. 210-699.000.
Morrow, Duane F., to Mead Johnson & Company. Antidepressant agent. 4,254,124, Cl. 424-250.000.
Morton-Norwich Products, Inc.: *See—*
Ayres, Peter J., 4,253,981, Cl. 252-49.600.
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Unitary frame and membrane for electrolytic cells. 4,253,932, Cl. 204-253.000.
Moser, Otto W.; and Thilo, Peer, to Siemens Aktiengesellschaft. Danger alarm system. 4,254,411, Cl. 340-517.000.
Motoike, Jun: *See—*
Yoda, Haruo; and Motoike, Jun, 4,254,400, Cl. 340-146.3MA.
Motoren-und Turbinen-Union Munchen GmbH: *See—*
Weiler, Wolfgang, 4,253,797, Cl. 415-162.000.
Motorola, Inc.: *See—*
Guillien, Michel Y., 4,254,380, Cl. 330-275.000.
Keller, Anthony F.; and Kraybill, Albert V., 4,254,382, Cl. 331-116.00R.
Ray, Kenneth I., 4,254,347, Cl. 307-297.000.
Saudax, Pierre, 4,254,396, Cl. 340-52.00R.
Motosugi, Katsuhiko: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.
Moulton, Joseph R.; and Barr, George R., Jr., to United States of America, Army. Simulated thermal target. 4,253,670, Cl. 273-407.000.
Mount, Ramon A.; and Robinson, Warn D., to Monsanto Company. Conditioning phosphorus-vanadium-oxygen catalyst. 4,253,988, Cl. 252-435.000.
Moussebois, Claude H.: *See—*
Limet, Joseph; Cambiaso, Cesar L.; Moussebois, Claude H.; and Masson, Pierre L., 4,253,844, Cl. 23-230.00B.
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., to General Instrument Corporation. Alpha-numeric display array and method of manufacture. 4,254,453, Cl. 362-240.000.
Moyer, Ross: *See—*
Wright, William E.; and Moyer, Ross, 4,253,225, Cl. 29-157.30R.
Mueller, Donald S., to Rohm and Haas Company. Polyglutarimides. 4,254,232, Cl. 525-66.000.
Mueller, Gary F.: *See—*
Friedericy, Johan A.; Mueller, Gary F.; and Lohay, James R., 4,253,520, Cl. 165-166.000.
Muller, Bernd, to Vama Vertrieb von Anlagen und Maschinen GmbH & Co. KG. Storage reservoirs for liquids heatable by solar energy. 4,253,446, Cl. 126-435.000.
Muller, Friedhelm: *See—*
Lobach, Wilfried; Lehmann, Wolfgang; and Muller, Friedhelm, 4,254,255, Cl. 528-312.000.
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, to Bayer Aktiengesellschaft. Novel transparent polyurethane polyurea films for lamination of glazing materials and their method of production. 4,254,176, Cl. 428-220.000.
Munnich, Hermann; and Glockner, Hermann, to SKF Kugellagerfabriken GmbH. Apparatus for determining the properties of a lubricant. 4,253,326, Cl. 73-10.000.
Munster, Heinrich, to Leistritz Maschinenfabrik, Paul Leistritz GmbH. Distributor gear assembly, particularly for double screw presses. 4,253,345, Cl. 74-665.0GA.
Munter, Ernst A., to Northern Telecom Limited. Digital communication bus system. 4,254,496, Cl. 370-16.000.
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, to Aida Engineering, Ltd.; and Hitachi, Ltd. Method for manufacturing high precision slugs. 4,253,323, Cl. 72-356.000.
Murano, Hatsuo; and Yamamuro, Yoshio, to Fujitsu Limited. Local device in a control information transfer system. 4,254,401, Cl. 340-147.00C.
Murase, Haruo: *See—*
Toyooka, Yasuo; Ohnishi, Kunio; Murase, Haruo; and Ueno, Tadaomi, 4,254,074, Cl. 264-132.000.
Murib, Jawad H.; and Inskeep, John M., to National Distillers & Chemical Corp. Process for the preparation of tetrahydrofuran. 4,254,039, Cl. 260-346.110.
Murphy, William. Personal golf set for par-3 course. 4,253,666, Cl. 273-80.100.
Murray, Robert M. S.; and Pitches, Brian E., to Ferranti Limited. Dispensing preset amounts of a product. 4,254,328, Cl. 235-92.0PE.
Muscatell, Ralph P. Emergency fuel dump device for aircraft. 4,253,626, Cl. 244-135.00R.
Muto, Naoki: *See—*
Otani, Masaru; Saito, Tetsu; Satoi, Shuzo; Mizoguchi, Junzo; and Muto, Naoki, 4,254,256, Cl. 536-18.000.
Myers, Douglas; and Vandenkieboom, John, to LaSalle Machine Tool, Inc. Pallet locating and clamping mechanism for a transfer machine. 4,253,559, Cl. 198-345.000.
Nagai, Koji: *See—*
Kato, Hitoshi; Nagai, Koji; and Kameda, Hiromi, 4,254,204, Cl. 430-122.000.
Nagata, Masayoshi: *See—*
Takeda, Keizi; Matsumoto, Kenji; and Nagata, Masayoshi, 4,254,214, Cl. 430-415.000.
Nagata, Wataru: *See—*
Hamashima, Yoshio; and Nagata, Wataru, 4,254,119, Cl. 424-246.000.
Naka, Keisuke, to Aisin Seiki Kabushiki Kaisha. Gas refrigerator. 4,253,859, Cl. 62-6.000.
Nakada, Akira: *See—*
Hiyoshi, Teruo; Nakada, Akira; and Yamada, Shigeru, 4,253,367, Cl. 84-1.220.
Nakagawa, George; and Nakagawa, Robert M. Speed governor for a disposable data recorder. 4,253,617, Cl. 242-55.000.
Nakagawa, Robert M.: *See—*
Nakagawa, George; and Nakagawa, Robert M., 4,253,617, Cl. 242-55.000.
Nakahata, Kozo, to Hitachi, Ltd. Purity detection apparatus for color picture tubes. 4,254,432, Cl. 358-10.000.
Nakamura, Kazuo: *See—*
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, 4,253,751, Cl. 354-25.000.
Nakamura, Kenichi: *See—*
Shibatani, Juichi; Nakamura, Kenichi; Izuhara, Wataru; and Obu, Yuichiro, 4,253,552, Cl. 188-218.00A.
Nakamura, Kotaro: *See—*
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,254,195, Cl. 430-17.000.
Nakao, Kiyoshi: *See—*
Takahashi, Hiroshi; Nakao, Kiyoshi; and Katagiri, Masaaki, 4,254,172, Cl. 428-131.000.
Nakauchi, Hiroshi; Inami, Yasuhiko; and Yano, Kozo, to Sharp Kabushiki Kaisha. Electrochromic display device. 4,253,741, Cl. 350-357.000.
Nalco Chemical Company: *See—*
Zakaria, Moneeb; and Slovinsky, Manuel, 4,253,994, Cl. 260-5.000.
Nanstiel, William F., Jr., to Westinghouse Electric Corp. Bore gauge. 4,253,241, Cl. 33-178.00R.
Narayanan, Kesh S.: *See—*
Rue, Charles V.; and Narayanan, Kesh S., 4,253,850, Cl. 51-298.000.
Narda Microwave Corporation, The: *See—*
Aslan, Edward E., 4,253,469, Cl. 128-736.000.
Nash, James L.; Polich, Stanley J.; and Carrico, Philip H., to General Electric Company. Biaxial film process and rotary apparatus therefor. 4,254,183, Cl. 428-213.000.
Nashua Corporation: *See—*
Cormier, Raymond G., 4,253,758, Cl. 355-3.0DR.
Keohan, Richard J., 4,253,571, Cl. 206-444.000.
Nassau Recycle Corporation: *See—*
Budzich, Mieczyslaw; and Fitz, Forest G., Jr., 4,254,164, Cl. 427-142.000.
National Distillers & Chemical Corp.: *See—*
Murib, Jawad H.; and Inskeep, John M., 4,254,039, Cl. 260-346.110.
National Mine Service Company: *See—*
LeBegue, Maurice K., 4,253,705, Cl. 299-76.000.
National Research Development Corp.: *See—*
Capaccio, Giancarlo; Smith, Francis S.; and Ward, Ian M., 4,254,072, Cl. 264-210.300.
National Welders Supply Co., Inc.: *See—*
Turner, James A., Jr., 4,253,716, Cl. 312-100.000.
Naud, William T.: *See—*
Clark, Jack L.; and Naud, William T., 4,253,667, Cl. 273-168.000.
Nawafune, Hidemi: *See—*
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,253,916, Cl. 204-14.00R.
NB Jackets Company: *See—*
Engelstein, Harold, 4,253,258, Cl. 40-158.00R.
NCR Corporation: *See—*
Tipon, Donald G., 4,254,407, Cl. 340-365.00P.
Whitely, Robert M., 4,254,469, Cl. 364-571.000.
Neal, Eugene J., Jr., to Pelton & Crane Company. Reflector for dental, medical or the like lighting device. 4,254,455, Cl. 362-296.000.
Nedre Norrlands Producentforening ek: *See—*
Egnell, Eric R., 4,253,386, Cl. 99-453.000.
Neeff, Wolf-Rainer: *See—*
Hammer, Klaus-Dieter; Gerigk, Gunter; Neeff, Wolf-Rainer; and Bytzek, Max, 4,253,879, Cl. 106-165.000.
Neilsen, Hildaur L. Deburring devices. 4,253,223, Cl. 29-90.00R.
Nelson, Eric W.: *See—*
Peterson, Jeffory A.; and Nelson, Eric W., 4,253,276, Cl. 49-249.000.
Nelson Industries, Inc.: *See—*
Midkiff, David G.; and Jaisinghani, Rajan A., 4,253,954, Cl. 210-168.000.
Nemethy, Mike Z.: *See—*
Ware, Ormond H., 4,253,835, Cl. 433-220.000.
Nemit, Jeffrey T.; and Sanders, Bobby J., to International Telephone and Telegraph Corporation. Three-way, equal-phase combiner/divider network adapted for external isolation resistors. 4,254,386, Cl. 333-128.000.

Neoloy Products, Inc.: *See*—
Prosen, Emil M., 4,253,869, Cl. 75-134.00C.
Neppel, Gerald J. Valve box adjusting tool. 4,253,355, Cl. 81-167.000.
Nesta, Charles: *See*—
Landheer, Dolf; Hwang, Shy-Shung; Nesta, Charles; and Squassoni, Gino F., 4,254,424, Cl. 346-139.00C.
Nestler, Heinz: *See*—
Dittrich, Werner; Nestler, Heinz; and Schnippering, Friedhelm, 4,254,009, Cl. 260-40.00R.
Nestor Associates: *See*—
Cooper, Leon N.; and Elbaum, Charles, 4,254,474, Cl. 364-900.000.
Netteland, Loyal G., to A-T-O Inc. Breathing valve assembly with diaphragm control of the exhaust ports. 4,253,455, Cl. 128-204.260.
New Jersey Zinc Company, The: *See*—
McGarry, Phillip E.; and Pacic, Zoran, 4,253,614, Cl. 241-24.000.
Newman, Neil F.; Roper, Robert; and West, Roger K., to Exxon Research & Engineering Co. Continuous process for the preparation of bromochlorinated butyl rubber. 4,254,240, Cl. 525-356.000.
Newman, Raymond A., to NP Industries, Inc. Echo location system which provides for measuring liquid level and flow rate and flow volume of flowing liquids. 4,254,482, Cl. 367-87.000.
Newman, Richard W.: *See*—
Moore, William C.; Newman, Richard W.; and Danna, Dominick, 4,253,447, Cl. 128-6.000.
News Log International Incorporated: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; and Terry, Angel F., 4,254,329, Cl. 235-379.000.
NGK Insulators, Ltd.: *See*—
Soejima, Shigeo; and Yamamoto, Noboru, 4,253,992, Cl. 252-477.00R.
Nichols, Frank S.: *See*—
Flowers, Ralph G.; Nichols, Frank S.; and Anderson, Robert P., 4,254,071, Cl. 264-102.000.
Niedzielski, Wojciech: *See*—
Markowski, Kazimierz; Truszkowski, Jacek; Niedzielski, Wojciech; and Slomkowski, Jaroslaw, 4,254,484, Cl. 367-115.000.
Nielsen, Leif, to Rex Rotary International Corporation A/S. Electric discharge printing device having a laminar stylus. 4,254,425, Cl. 346-162.000.
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., to Institute po Metaloznanie I Technologia Na Metalite. Apparatus for nitriding metal materials and ferroalloys under pressure. 4,253,868, Cl. 75-59.000.
Niles, Paul D.; and Normann, Richard W., to Bendix Corporation, The. Method of making electrical contact. 4,253,234, Cl. 29-882.000.
Nippon Electric Co., Ltd.: *See*—
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, 4,253,341, Cl. 73-861.770.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Nakada, Akira; and Yamada, Shigeru, 4,253,367, Cl. 84-1.220.
Kobayashi, Eiji, 4,253,370, Cl. 84-198.000.
Nippon Gas Co., Ltd.: *See*—
Ogawa, Syunji; and Kitabayashi, Seiichi, 4,253,818, Cl. 431-142.000.
Nippon Kinzoku Co., Ltd.: *See*—
Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, 4,253,620, Cl. 242-107.000.
Nippon Kogaku K.K.: *See*—
Ichihara, Yutaka, 4,253,752, Cl. 354-25.000.
Maida, Osamu, 4,253,750, Cl. 354-23.00D.
Nippon Paint Co., Ltd.: *See*—
Tsuchiya, Yasuyuki; Ichikawa, Akio; and Yamasoe, Kastuyoshi, 4,253,930, Cl. 204-181.00C.
Nippon Petrochemicals Co., Ltd.: *See*—
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, 4,254,292, Cl. 585-320.000.
Nippon Soken, Inc.: *See*—
Akita, Sigeyuki, 4,254,485, Cl. 367-117.000.
Asano, Mitsuru; Segawa, Yoshihiro; and Kondo, Kenji, 4,253,302, Cl. 60-276.000.
Nippon Steel Corporation: *See*—
Goto, Kanji; Yamaguti, Tiyomi; Mikami, Yorihito; and Komakine, Rokuro, 4,253,646, Cl. 266-281.000.
Takamatsu, Toshio; Haga, Hiroyo; Aoki, Kazuo; and Sato, Takeshi, 4,254,323, Cl. 219-110.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Ido, Satoshi; Hamamoto, Nobuo; and Ichino, Kazuo, 4,254,368, Cl. 318-603.000.
Tawara, Kanzi; Hamazato, Kazuo; Takahashi, Tatsuro; and Egawa, Tetsuaki, 4,254,498, Cl. 370-63.000.
Nisenson, Jules, to Nisenson Technology Corp. Bi-directional clutch. 4,253,554, Cl. 192-8.00R.
Nisenson Technology Corp.: *See*—
Nisenson, Jules, 4,253,554, Cl. 192-8.00R.
Nishi, Atsuyoshi; Kuwazawa, Hiroyasu; and Oshima, Kaneyoshi, to Mitsubishi Denki Kabushiki Kaisha. Reservoir type water heating device. 4,253,426, Cl. 122-13.00R.
Nishide, Katsuhiko: *See*—
Yokono, Koujiro; and Nishide, Katsuhiko, 4,254,193, Cl. 430-1.000.
Nishihama, Hitoshi: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,254,202, Cl. 430-120.000.
Nishikawa, Masaji: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,253,760, Cl. 355-14.0CU.
Nishikawa, Munehiro, to Kubota, Ltd. Pipe nesting apparatus and method of nesting and unnesting pipes with the apparatus. 4,253,792, Cl. 414-589.000.
Nishikawa, Yasuhisa; Ishii, Yoichi; and Kanai, Takao. Pushbutton tuner having tapering portion pivotal pins. 4,254,389, Cl. 334-7.000.
Nishimoto, Seiya, to Laurel Bank Machine Co., Ltd. Multiple bank note temporary storing device for bank note totaling machine. 4,253,655, Cl. 271-216.000.
Nishimura, Sadanori: *See*—
Yamada, Yoji; Nishimura, Sadanori; Shimizu, Takeyuki; and Maezono, Masakazu, 4,253,553, Cl. 192-3.620.
Nishina, Shuho, to Toyota Jidosha Kogyo Kabushiki Kaisha. Webbing retractor. 4,253,622, Cl. 242-107.40A.
Nishino, Hiroshi: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,254,398, Cl. 340-58.000.
Nissan Motor Company, Limited: *See*—
Kato, Yoshiaki, 4,253,330, Cl. 73-113.000.
Kawamura, Yoshihisa; Inoue, Mitsumasa; and Saito, Masaaki, 4,253,441, Cl. 123-445.000.
Kuroki, Tadashi, 4,253,306, Cl. 60-561.000.
Matsuoka, Hideoki, 4,254,375, Cl. 324-115.000.
Takegawa, Tetuo, 4,253,633, Cl. 248-475.00B.
Nissen, Roland N., to J. I. Case Company. Support structure for dozer blade. 4,253,529, Cl. 172-831.000.
Nitta, Hideo: *See*—
Sato, Hideo; Shimamune, Takayuki; Goto, Toshiki; and Nitta, Hideo, 4,253,933, Cl. 204-293.000.
Noda, Nobutaka: *See*—
Takizawa, Tatsuji; and Noda, Nobutaka, 4,253,761, Cl. 355-15.000.
Noddin, Kenneth W., to Shockley, William R. Mobile antenna raising and lowering device. 4,254,419, Cl. 343-715.000.
Noe, Manfred. Labelled fabric, a method and an arrangement for making a labelled fabric. 4,253,383, Cl. 493-200.000.
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine of a counter-flow type. 4,253,432, Cl. 123-52.00M.
Normann, Richard W.: *See*—
Niles, Paul D.; and Normann, Richard W., 4,253,234, Cl. 29-882.000.
Norris, Forbes. Automatic adjusting wave gutter for swimming pools. 4,253,202, Cl. 4-497.000.
Norris, Philip R.; and Wareham, Richard R., to Polaroid Corporation. Card motion picture camera system. 4,253,748, Cl. 352-82.000.
North Pacific Dental, Inc.: *See*—
Kazen, Douglas H.; and Dengah, Rudy F., 4,253,830, Cl. 433-77.000.
Northern Telecom Limited: *See*—
Munter, Ernst A., 4,254,496, Cl. 370-16.000.
Northrop Corporation: *See*—
Stappaerts, Eddy A., 4,254,348, Cl. 307-426.000.
Norton Company: *See*—
Rue, Charles V.; and Narayanan, Kesh S., 4,253,850, Cl. 51-298.000.
Notari, Bruno: *See*—
Manara, Giovanni; Fattore, Vittorio; Taramasso, Marco; and Notari, Bruno, 4,254,296, Cl. 585-640.000.
Nouet, Christian, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method of making an inductive circuit incorporated in a planar circuit support member. 4,253,231, Cl. 29-602.00R.
Novatome: *See*—
Blaive, Daniel; and Lafosse, Claude, 4,253,695, Cl. 294-95.000.
NP Industries, Inc.: *See*—
Newman, Raymond A., 4,254,482, Cl. 367-87.000.
NSK Warner Kabushiki Kaisha: *See*—
Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, 4,253,620, Cl. 242-107.000.
Nubert, Ingomar: *See*—
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,254,269, Cl. 549-59.000.
Nugent, Jerry L. Drill pipe reforming method and apparatus. 4,253,324, Cl. 72-393.000.
Nussbaumer, Dieter: *See*—
Franken, Walter; Nussbaumer, Dieter; Perl, Horst; and Weickhardt, Ludwig, 4,253,963, Cl. 210-500.200.
Nussim, Menasse: *See*—
Kaspi, Joseph; Gross, Moshe; and Nussim, Menasse, 4,254,029, Cl. 260-239.100.
N.V. Centrale Suiker Maatschappij: *See*—
Pette, Kees C., 4,253,956, Cl. 210-188.000.
Oaks, Frank B.; and Ramquist, Amos H., to CX Corporation. Film unloading and handling mechanism. 4,253,788, Cl. 414-403.000.
Oberkirch, Wolfgang: *See*—
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,254,176, Cl. 428-220.000.
Obrist, Albert: *See*—
Aichinger, Dietmar; and Obrist, Albert, 4,253,581, Cl. 215-344.000.
Obu, Yuichiro: *See*—
Shibatani, Juichi; Nakamura, Kenichi; Izuhara, Wataru; and Obu, Yuichiro, 4,253,552, Cl. 188-218.00A.
Occidental Research Corporation: *See*—
Caesar, Michael B., 4,253,853, Cl. 55-226.000.

Oce-van der Grinten N.V.: *See*—
Draai, Willem T.; and Rongen, Josephus W., 4,254,206, Cl. 430-126.000.
O'Connor, James A.; Kiefer, Kenneth P.; and Vogel, Ralph A., to Essex Group, Inc. Reinforced spool for storing and transporting strand material and a package assembly utilizing the same. 4,253,569, Cl. 206-391.000.
O'Connor, James A.; and Kiefer, Kenneth P., to Essex Group, Inc. Reinforced spool for storing and transporting strand material and a package assembly utilizing the same. 4,253,570, Cl. 206-391.000.
Odstrchel, Gerald: *See*—
McDonald, Hugh C.; Odstrchel, Gerald; and Takeguchi, Milton M., 4,254,218, Cl. 435-7.000.
Officine Vezzani S.p.A.: *See*—
Vezzani, Luciano, 4,253,388, Cl. 100-39.000.
Ogawa, Akira: *See*—
Yagihara, Morio; Yokota, Yukio; Ogawa, Akira; and Sawaguchi, Hiroshi, 4,254,212, Cl. 430-381.000.
Ogawa, Koichi; Tezuka, Shichigoro; Maruyama, Takashi; and Kiyokawa, Kazuo, to Lotte Co., Ltd. Coldproof chewing gum. 4,254,148, Cl. 426-3.000.
Ogawa, Syunji; and Kitabayashi, Seiichi, to Nippon Gas Co., Ltd. Igniting device. 4,253,818, Cl. 431-142.000.
Ogimoto, Tetsuomi: *See*—
Doi, Koichi; Mori, Fumio; Ichinose, Isao; Ogimoto, Tetsuomi; and Kitakawa, Katsuhiko, 4,253,580, Cl. 215-228.000.
Ogino, Hitomi: *See*—
Tsukagoshi, Tsunehiro; Suzuki, Shin-ichi; and Ogino, Hitomi, 4,254,184, Cl. 428-408.000.
Ogle, Robert W., to IMS Limited. Transfer system. 4,253,501, Cl. 141-27.000.
O'Halloran, Rosemary, to Exxon Research & Engineering Co. Hydraulic automatic transmission fluid with superior friction performance. 4,253,977, Cl. 252-33.400.
O'Hare, Louis R. Convection current pumping called, series convection pump. 4,253,801, Cl. 417-52.000.
Ohashi, Minoru; and Iwaosa, Katsuaki, to Mitsubishi Paper Mills, Ltd. Hardener-incorporated gelatin composition. 4,254,217, Cl. 430-623.000.
Ohgami, Kazuhiko: *See*—
Ojima, Shin; Ohgami, Kazuhiko; and Hisazumi, Atsuhi, 4,254,488, Cl. 368-82.000.
Ohkawa, Shuji; and Kikuchi, Itsuo, to Hitachi Heating Appliances Co., Ltd. Door seal arrangement for high-frequency heating apparatus. 4,254,318, Cl. 219-10.55D.
Ohki, Hiroshi: *See*—
Kojima, Chiaki; Otobe, Takashi; and Ohki, Hiroshi, 4,253,723, Cl. 350-3.720.
Ohmori, Akira; and Shinjo, Masayoshi, to Daikin Kogyo Co., Ltd. Epoxy resin composition. 4,254,000, Cl. 260-18.0PN.
Ohnishi, Kunio: *See*—
Toyooka, Yasuo; Ohnishi, Kunio; Murase, Haruo; and Ueno, Tadaomi, 4,254,074, Cl. 264-132.000.
Ohta, Katsumi: *See*—
Konno, Mitoshi; Itoh, Hiroyuki; Tokuhiro, Takao; Ohta, Katsumi; and Hayashi, Masaki, 4,254,056, Cl. 564-387.000.
Ohtsu Tire Kabushiki Kaisha: *See*—
Yoshioka, Tomoaki; and Fujioka, Keiji, 4,253,512, Cl. 152-353.00G.
Ojima, Shin; Ohgami, Kazuhiko; and Hisazumi, Atsuhi, to Hoshidenki-Seizo Kabushiki Kaisha. Analog electronic timepiece. 4,254,488, Cl. 368-82.000.
Oka, Tateki; and Tanaka, Susumu, to Minolta Camera Kabushiki Kaisha. Dry process developing method employing magnetic toner. 4,254,203, Cl. 430-120.000.
Okada, Kenichi: *See*—
Ono, Shohachi; Umeda, Noriaki; Kai, Hisayoshi; and Okada, Kenichi, 4,254,028, Cl. 260-23.00S.
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; and Miyake, Kentaro, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Processes for producing syrups of syrup solids containing fructose-terminated oligosaccharides. 4,254,227, Cl. 435-97.000.
Okamoto, Takeshi: *See*—
Mikoshiba, Nobuo; Minagawa, Shoichi; and Okamoto, Takeshi, 4,254,388, Cl. 333-195.000.
Okazaki, Hidemasa: *See*—
Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa, 4,253,545, Cl. 182-240.000.
Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Agent for protecting the surface of lithographic printing plate comprising a plasticizer containing oil phase and a surfactant and a hydrophilic high molecular weight compound containing aqueous phase. 4,253,999, Cl. 260-17.00R.
Okutani, Katsunobu: *See*—
Yodogawa, Masatada; Morisawa, Matsuo; Yamamoto, Takashi; and Okutani, Katsunobu, 4,254,070, Cl. 264-61.000.
Olin Corporation: *See*—
Gay, Walter A.; and Twohig, Elizabeth A., 4,254,265, Cl. 548-128.000.
Lynch, Richard W.; Hilliard, Garland E.; and Dotson, Ronald L., 4,253,923, Cl. 204-98.000.
Wojtowicz, John A., 4,253,950, Cl. 210-696.000.
Olivie, Jacques, to Akzona Incorporated. Synthesis for the preparation of tetracyclic compounds. 4,254,031, Cl. 260-243.300.
Olson, Larry E. Apparatus for collecting sawdust produced by a circular power saw. 4,253,362, Cl. 83-100.000.
Olson, Paul E., to American Standard Inc. Fluid control system. 4,253,379, Cl. 91-35.000.
Olympus Optical Co., Ltd.: *See*—
Taira, Akio, 4,253,726, Cl. 350-87.000.
Terada, Masaaki, 4,253,448, Cl. 128-4.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,253,760, Cl. 355-14.0CU.
Omnium d'Assainissement: *See*—
Lebesgue, Yves; and Miglioretti, Frederic, 4,253,966, Cl. 210-610.000.
O'Neal, Gilbert L. Tool for opening cans. 4,253,352, Cl. 81-3.46R.
O'Neill, Edward G.: *See*—
Dutcher, Robert G.; O'Neill, Edward G.; and Sandstrom, Richard D., 4,253,462, Cl. 128-303.00R.
Onishi, Janet C.; Rowin, Gerald L.; and Miller, John E., Jr., to Merck & Co., Inc. Fermentation method for producing antibiotic A43F. 4,254,224, Cl. 435-71.000.
Onizawa, Masao, to Sanyo Trading Co., Ltd. Composition containing vinylpyridine-styrene-butadiene copolymer, and use thereof as adhesive. 4,254,016, Cl. 260-45.85A.
Ono Pharmaceutical Co., Ltd.: *See*—
Konno, Mitoshi; Itoh, Hiroyuki; Tokuhiro, Takao; Ohta, Katsumi; and Hayashi, Masaki, 4,254,056, Cl. 564-387.000.
Ono, Shohachi; Umeda, Noriaki; Kai, Hisayoshi; and Okada, Kenichi, to Asahi-Dow Limited. Styrene resin composition. 4,254,028, Cl. 260-23.00S.
Orain, Michel A., to Glaenzer Spicer. Torque transmitting element and device. 4,253,776, Cl. 403-337.000.
Orlando, Samuel J.: *See*—
Miller, Charles M., Jr.; and Orlando, Samuel J., 4,253,665, Cl. 273-63.00G.
Ose, Toshihiko. Tee-up apparatus for practicing golf. 4,253,668, Cl. 273-201.000.
Oshida, Jun-ichi: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida, Jun-ichi, 4,254,045, Cl. 260-397.200.
Oshima, Kaneyoshi: *See*—
Nishi, Atsuyoshi; Kuwazawa, Hiroyasu; and Oshima, Kaneyoshi, 4,253,426, Cl. 122-13.00R.
Otani, Masaru; Saito, Tetsu; Satoi, Shuzo; Mizoguchi, Junzo; and Muto, Naoki, to Toyo Jozo company, Ltd. Amino sugar compound. 4,254,256, Cl. 536-18.000.
Otis Engineering Corporation: *See*—
Setterberg, John R., Jr., 4,253,522, Cl. 166-278.000.
Otobe, Takashi: *See*—
Kojima, Chiaki; Otobe, Takashi; and Ohki, Hiroshi, 4,253,723, Cl. 350-3.720.
Otsuka, Kazuo, to Otsuka Sangyo Kabushiki Kaisha. Method and apparatus for regenerating foamed plastics. 4,254,068, Cl. 264-37.000.
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Otsuka, Kazuo, 4,254,068, Cl. 264-37.000.
Otterson, Lewis L., to Weatherchem Corporation. Reclosable closure for powder can. 4,253,587, Cl. 222-151.000.
Ouchi, Yasushi: *See*—
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.
Overmoe, Kenneth R. Step walker. 4,253,287, Cl. 52-184.000.
Owatari, Noboru: *See*—
Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, 4,253,620, Cl. 242-107.000.
Owen, Oliver E. Semi-quantitative assay of lactic acid and β-hydroxy butyrate. 4,254,222, Cl. 435-26.000.
Owens-Illinois, Inc.: *See*—
Kobayashi, Shigeru, 4,253,862, Cl. 65-75.000.
Miller, Peter S., 4,254,370, Cl. 318-685.000.
P. H.-Tech., Inc.: *See*—
Dallaire, Raymond, 4,253,278, Cl. 49-420.000.
Pace, R. B. Pole structure for supporting a net of a field game. 4,253,671, Cl. 273-411.000.
Pacholski, Jan; Kujawski, Zenon; Janczyk, Ryszard; and Bartczak, Marian, to Centralny Osrodek Badawczorozwojowy Maszyn Wlokienniczych "Polmatex-Cenaro". Method and apparatus for the production of core yarn. 4,253,297, Cl. 57-5.000.
Pacic, Zoran: *See*—
McGarry, Phillip E.; and Pacic, Zoran, 4,253,614, Cl. 241-24.000.
Pahl, James H., to Eaton Corporation. Fluid pressure operated wheel drive. 4,253,807, Cl. 418-61.00B.
Pankove, Jacques I., to RCA Corporation. Method and structure for passivating semiconductor material. 4,254,426, Cl. 357-2.000.
Parker, Aaron F.: *See*—
McInerny, George P.; and Parker, Aaron F., 4,253,651, Cl. 270-58.000.
Parks, Robert P. Anchor strap. 4,253,594, Cl. 224-318.000.
Parry, Peter D.; and Jerde, Leslie G., to Western Electric Company, Inc. Anisotropic plasma etching. 4,253,907, Cl. 156-643.000.
Passarotti, Carlo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; Ceserani, Roberto; and Usardi, Maria M., 4,254,137, Cl. 424-283.000.
Pasternack, Adalbert, to Dragerwerk Aktiengesellschaft. Device for enclosing a person's head to test a breathing mask. 4,253,328, Cl. 73-40.700.
Pate, Jerry W.: *See*—
Fulghum, Donald P.; and Pate, Jerry W., 4,254,304, Cl. 179-2.0DP.

Pattermann, Norbert C. Flat trowel carriers and combinations therewith. 4,253,593, Cl. 224-253.000.
Paucha, Eugene, to American Air Filter Company, Inc. Filter arrangement. 4,253,856, Cl. 55-374.000.
Paul Wurth, S.A.: *See—*
Legille, Edouard, 4,253,485, Cl. 137-315.000.
Paulus, Erich: *See—*
Spietschka, Ernst; Urban, Manfred; and Paulus, Erich, 4,253,839, Cl. 8-565.000.
Peacher, Stanley E.: *See—*
Pfeiffer, Ronald E.; and Peacher, Stanley E., 4,254,076, Cl. 264-206.000.
Pearson, Charles J.: *See—*
Larson, William M; Pearson, Charles J.; and Rogers, Thomas H., 4,253,513, Cl. 152-354.00R.
Peer, A. Dean, Jr., to Coors Container Company. Composite material for secondary container packaging. 4,254,173, Cl. 428-204.000.
Peet, Norton P.: *See—*
Sunder, Shyam; Daniel, John K.; and Peet, Norton P., 4,254,125, Cl. 424-250.000.
Pegel, Karl H.; and Rogers, Colin B., to Roecar Holdings (Netherlands Antilles) NV. Sterolin products. 4,254,111, Cl. 424-182.000.
Pelavin, Milton H.: *See—*
Smythe, William J.; Isreeli, Jack; and Pelavin, Milton H., 4,253,846, Cl. 23-230.00R.
Pelton & Crane Company: *See—*
Hardin, William C., Jr., 4,254,454, Cl. 362-282.000.
Neal, Eugene J., Jr., 4,254,455, Cl. 362-296.000.
Penchev, Hristo G.: *See—*
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.
Penney, Keith A.: *See—*
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.
Pennington, Keith S.: *See—*
Crooks, Walter; and Pennington, Keith S., 4,253,775, Cl. 400-198.000.
Pennwalt Corporation: *See—*
Stewart, John M; and Morris, Dan H., 4,254,023, Cl. 260-112.50R.
Stewart, John M.; Morris, Dan H.; and Chipkin, Richard E., 4,254,024, Cl. 260-112.50R.
Toukan, Sameeh S.; and Hauptschein, Murray, 4,254,266, Cl. 548-173.000.
Peoples, John C. Whip antenna of reduced length for VHF radio communication. 4,254,420, Cl. 343-715.000.
Peoples, Ric L. Modular, hybrid integrated circuit assembly. 4,254,446, Cl. 361-383.000.
Perez-Cavero, Leonardo; Cross, Michael W. A.; Fielding, Geoffrey; and Gray, Frederick M., to General Electric Company Limited, The. Systems for transmitting information in an alternating current electricity supply system. 4,254,403, Cl. 340-310.00R.
Perkins, William C., to Rockwell International Corporation. Transformer arrangement for coupling a communication signal to a three-phase power line. 4,254,402, Cl. 340-310.00R.
Perl, Horst: *See—*
Franken, Walter; Nussbaumer, Dieter; Perl, Horst; and Weickhardt, Ludwig, 4,253,963, Cl. 210-500.200.
Permelec Electrode Ltd.: *See—*
Sato, Hideo; Shimamune, Takayuki; Goto, Toshiki; and Nitta, Hideo, 4,253,933, Cl. 204-293.000.
Perrault, Robert D., to Union Camp Corporation. Device for controlling the flow of steam in paper machine dryers. 4,253,245, Cl. 34-48.000.
Persson, Lennart P. E.: *See—*
Hakansson, Hakan B.; and Persson, Lennart P. E., 4,253,334, Cl. 73-362.0AR.
Peterson, Jeffory A.; and Nelson, Eric W., to Truth Incorporated. Operator for a casement-type window. 4,253,276, Cl. 49-249.000.
Petitpierre, Jean C.; and Burri, Peter, to Ciba-Geigy Corporation. Carbazolylmethane compounds. 4,254,032, Cl. 260-315.000.
Petrella, Ronald V.: *See—*
Thomas, Lowell S.; and Petrella, Ronald V., 4,254,015, Cl. 260-45.90R.
Petren, Rolf A. M. Method and a system for the erection of high buildings. 4,253,549, Cl. 182-150.000.
Petrolite Corporation: *See—*
Godar, Richard L.; Hendricks, Carl C.; and Roux, Kenneth R., 4,253,876, Cl. 106-14.420.
Pette, Kees C., to N.V. Centrale Suiker Maatschappij. Apparatus for the anaerobic purification of waste water. 4,253,956, Cl. 210-188.000.
Peychev, Ivan M.: *See—*
Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.
Pez, Guido P.: *See—*
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Pfaff, Georg: *See—*
Jundt, Werner; Bodig, Bernd; Hohne, Gerd; Pfaff, Georg; Sohner, Gerhard; and Kalkhof, Bernd, 4,253,442, Cl. 123-618.000.
Pfaff Haushaltmaschinen GmbH: *See—*
Greiner, Ulrich, 4,253,715, Cl. 312-21.000.
PFC Industries, Inc.: *See—*
Milzoff, Fred L.; and DeSaro, Charles, 4,253,672, Cl. 273-424.000.
Pfeiffer, Ronald E.; and Peacher, Stanley E., to American Cyanamid Company. Melt-spinning acrylonitrile polymer fiber using spinnerette plate with multiple capillaries per counterbore. 4,254,076, Cl. 264-206.000.
Pfizer Inc.: *See—*
Glowaky, Raymond C.; Kurowsky, Steven R.; and Sysko, Robert J., 4,254,250, Cl. 525-350.000.
Traenckner, Hans-Joachim; Rosenkranz, Hans J.; and Rudolph, Hans, 4,253,918, Cl. 204-159.220.
Phelps, Edwin H.; and Snow, William E., to American Cast Iron Pipe Company. Method of forming a filled polymer coating on an internal cylindrical surface and article produced thereby. 4,254,165, Cl. 427-183.000.
Philip Morris Incorporated: *See—*
Keritsis, Gus D., 4,253,929, Cl. 204-180.00P.
Philipp Holzmann Aktiengesellschaft: *See—*
Fischer, Joachim; Brandl, Siegfried; and Bartoszek, Rudolf, 4,253,781, Cl. 405-260.000.
Philipps, Donald F.; and Williamson, Richard D., to Marley-Wylain Company, The. Fan or blower assembly. 4,253,796, Cl. 415-157.000.
Phillips, Edward H. Process for forming a multifocal lens and lens formed thereby. 4,253,746, Cl. 351-168.000.
Phillips Petroleum Company: *See—*
Borenstein, David E.; and Banning, Jack A., 4,253,299, Cl. 57-246.000.
Wiley, Bruce F., 4,253,327, Cl. 73-38.000.
Wiley, Bruce F., 4,254,479, Cl. 367-35.000.
Piazza, John R., to Western Electric Company, Inc. Strippable resists. 4,254,163, Cl. 427-96.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Device for bringing about particle growth in a flowing liquid suspension. 4,253,964, Cl. 210-513.000.
Pielkenrood, Jacob, to Pielkenrood-Vinitex B.V. Purification device. 4,253,965, Cl. 210-519.000.
Pielkenrood-Vinitex B.V.: *See—*
Pielkenrood, Jacob, 4,253,964, Cl. 210-513.000.
Pielkenrood, Jacob, 4,253,965, Cl. 210-519.000.
Pierce, Earl W.: *See—*
Wilson, John R., Jr.; and Pierce, Earl W., 4,254,085, Cl. 422-171.000.
Pietzuch, Edward E. Vehicle exhaust emission testing adapter. 4,253,336, Cl. 73-422.00R.
Pifer, Clifford E.: *See—*
Hickman, Stephen L.; and Pifer, Clifford E., 4,253,224, Cl. 29-157.00T.
Pillifant, Harold E., Jr. Disposable traffic barricade. 4,253,777, Cl. 404-6.000.
Pioneer Electronic Corporation: *See—*
Kawanabe, Yoshihiro, 4,254,379, Cl. 330-268.000.
Tsukagoshi, Tsunehiro; Suzuki, Shin-ichi; and Ogino, Hitomi, 4,254,184, Cl. 428-408.000.
Piotrowski, Wieslaw S.; and Raue, Jorg E., to TRW Inc. Electronic waveguide switch. 4,254,384, Cl. 333-1.100.
Pistone, Marco M., to Cartografica Santerno S.p.A. Process for creating playthings, particularly those that fly, and a toy made with the said process. 4,253,897, Cl. 156-256.000.
Pitches, Brian E.: *See—*
Murray, Robert M. S.; and Pitches, Brian E., 4,254,328, Cl. 235-92.0PE.
Plantex Ltd.: *See—*
Kaspi, Joseph; Gross, Moshe; and Nussim, Menasse, 4,254,029, Cl. 260-239.100.
Plough, Inc.: *See—*
Kaplan, Carl; Marlowe, Edward; and Sayre, Robert M., 4,254,102, Cl. 424-59.000.
Plunkett, Luther C., Jr., to Lanier Business Products, Inc. Sequential encoding and decoding apparatus for providing identification signals to a dictation recorder. 4,254,307, Cl. 369-26.000.
Pocholle, Jean-Paul: *See—*
Jeunhomme, Luc; and Pocholle, Jean-Paul, 4,253,727, Cl. 350-96.150.
Pocket-Pak, Inc.: *See—*
Goldammer, Arthur R., 4,253,567, Cl. 206-387.000.
Podolak, Wayne S. Accessory apparatus for weight lifting. 4,253,662, Cl. 272-123.000.
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Friedman, Harvey S.; and Rubinstein, Leon, 4,253,757, Cl. 354-304.000.
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evaluating antioxidant effectiveness in lipid-polypeptide layers. 4,253,848, Cl. 23-230.0HC.
Posta, Keith F. Indication assembly. 4,253,197, Cl. 2-69.000.
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Johnson, Harlan B., 4,253,924, Cl. 204-98.000.
Simmons, Robert B., 4,253,935, Cl. 204-295.000.
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Price, Harold A., to Watson Energy Systems, Inc. Method and apparatus for separating waste materials. 4,253,940, Cl. 209-3.000.
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Prosen, Emil M., to Neoloy Products, Inc. Semi-precious alloy. 4,253,869, Cl. 75-134.00C.
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Markowski, Kazimierz; Truszkowski, Jacek; Niedzielski, Wojciech; and Slomkowski, Jaroslaw, 4,254,484, Cl. 367-115.000.
Pulker, Hans K.; and Daxinger, Helmut, to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. Method of producing gold-color coatings. 4,254,159, Cl. 427-38.000.
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Busby, James L., 4,254,409, Cl. 340-731.000.
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Racicot, Andre. Metal truss structure. 4,253,210, Cl. 14-17.000.
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Ramm, Peter J.; and Barnes, Alan C., to Roussel Uclaf. Novel imidazoquinoxalines. 4,254,123, Cl. 424-250.000.
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Sokolov, Mordechai, 4,253,310, Cl. 62-79.000.
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Ramsey, James C., III; and Schoner, Philip J., to Procter & Gamble Company, The. Shampoo in flake form. 4,253,993, Cl. 252-548.000.
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Nikolov, Ivan D.; Rashev, Tzolo V.; Chorbov, Iliya G.; Peychev, Ivan M.; Penchev, Hristo G.; Marinov, Marin I.; and Bradvarov, Alexander K., 4,253,868, Cl. 75-59.000.
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Walker, Jack M.; and Tweed, Donald G., 4,254,326, Cl. 219-536.000.
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Raymond, James C.; Lemay, Richard A.; and Kelly, Richard P., to Honeywell Information Systems Inc. Hardware/firmware communication line adapter. 4,254,462, Cl. 364-200.000.
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Henderson, John G. N.; and Maturo, Robert J., 4,254,506, Cl. 455-158.000.
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Red Fox Industries Inc.: *See—*
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Redwood, Martin; Stevens, Richard; White, Philip D.; and Mitchell, Richard F., to U.S. Philips Corporation. Acoustic wave devices. 4,254,387, Cl. 333-194.000.
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Reed, Robert H.; and Yagger, David F., to Cummins Engine Company, Inc. Calibration of torque measuring transducers. 4,253,325, Cl. 73-1.00C.
Rees, David H., Jr.; and Hickey, Gerald A. Productive use of cedar hog waste. 4,253,273, Cl. 47-58.000.
Regan, James L. Tape dispenser. 4,253,905, Cl. 156-523.000.
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Reinhall, Rolf B. Method and apparatus for controlling the effect of the centrifugal force on the stock in pulp defibrating apparatus. 4,253,613, Cl. 241-16.000.
Reinhard, Gerhard, to Vereinigte Flugtechnische Werke-Fokker GmbH. Telescopic equipment carrier including antennas. 4,254,423, Cl. 343-883.000.
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Wambach, Raimund; Hartung, Sigurd; Reiss, Gerhard; and Puppe, Lothar, 4,254,062, Cl. 570-211.000.
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Renk, Paul, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Mixing apparatus. 4,253,771, Cl. 366-89.000.
Repetto, Silvio, to S.p.A. Luigi Rizzi & C. Machine for trimming skins. 4,253,318, Cl. 69-9.100.
Repro Med Systems, Inc.: *See*—
Zorgniotti, Adrian W.; and Sealfon, Andrew I., 4,253,464, Cl. 128-400.000.
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Hanifin, John W., Jr.; and Ridge, David N., 4,254,049, Cl. 260-465.00D.
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Rigg, Dale L. Personally portable helmet rest. 4,253,630, Cl. 248-346.000.
Rinker, William R.; and Varga, Richard S., to B. F. Goodrich Company, The. Bonding composition and microwave process for bonding together plastic components. 4,253,898, Cl. 156-272.000.
Rippe, Delfin F., to American Hospital Supply Corporation. Method of detecting antibodies to human thyroglobulin. 4,254,097, Cl. 424-8.000.
Rixon, Rupert K. Self aligning rolling element bearing. 4,253,712, Cl. 308-183.000.
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Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased; and Wanders, Marlene, heir, 4,253,815, Cl. 425-235.000.
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Jundt, Werner; Bodig, Bernd; Hohne, Gerd; Pfaff, Georg; Sohner, Gerhard; and Kalkhof, Bernd, 4,253,442, Cl. 123-618.000.
Seeger, Karl; Ruf, Walter; Sohner, Gerhard; and Jundt, Werner, 4,253,443, Cl. 123-609.000.
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Scott, Douglas S., 4,253,604, Cl. 236-87.000.
Robertson, Richard E., to Ford Motor Company. Adhesion of vinyl plastisol coatings. 4,254,006, Cl. 260-31.80M.
Robinson, T. Garrett. Treatment of fuel. 4,254,393, Cl. 335-209.000.
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Perkins, William C., 4,254,402, Cl. 340-310.00R.
Vasile, Carmine F., 4,253,337, Cl. 73-599.000.
Rocton, Lucien, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Sealed connection between an optical fibre cable and a submerged housing. 4,253,729, Cl. 350-96.200.
Rodger, Kermit J. Bulkhead brace. 4,253,635, Cl. 249-47.000.
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Roeing, Richard S.; and Defoe, Richard A., to Mallard Manufacturing Corporation. Conveyor system. 4,253,558, Cl. 193-35.00A.
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Rolff, Rolf: *See*—
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Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R, trans)cyclopropanecarboxylic acids and derivatives thereof. 4,254,277, Cl. 560-118.000.
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Ross, David A.; and Aperavich, Steven M. Prosthesis with self-sealing valve. 4,253,201, Cl. 3-36.000.
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Ross, Nicholas D.; White, George A.; and Allinson, William L., to Carnation Company. Process for preparing frozen par-fried potatoes. 4,254,153, Cl. 426-441.000.
Rostler, Peter S., to Jersey Nuclear-AVCO Isotopes, Inc. Multipass illumination of an elongated zone. 4,254,336, Cl. 250-294.000.
Roullet, Gilbert; and Legrand, Pierre, to Rhone-Poulenc Industries. Process for rendering polyester hollow bodies gastight. 4,254,170, Cl. 428-36.000.
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Ramm, Peter J.; and Barnes, Alan C., 4,254,123, Cl. 424-250.000.
Roux, Kenneth R.: *See*—
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Rovnyak, George C., to E. R. Squibb & Sons, Inc. Mercaptoacyldihydropyrazole carboxylic acid derivatives. 4,254,267, Cl. 548-379.000.
Rowe, Alexander W. Procedures and apparatus for the conditioning and protection of workmen in hot environments. 4,253,313, Cl. 62-259.00B.
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Rowland, Stanley P.; Blouin, Florine A.; and Shih, Frederick F., to United States of America, Agriculture. Abrasion resistance and strength of cotton-containing fabric made resilient with N-methylolacrylamide-type reagent. 4,254,005, Cl. 260-29.60H.
Rozzelle, Rodney R. Sounding device. 4,253,657, Cl. 272-14.000.
Rubbermaid Commercial Products Inc.: *See*—
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Rubinstein, Leon: *See*—
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Rudolph, Marvin J.; and Hynson, Richard B., to General Foods Corporation. Carbonated chewing gum. 4,254,149, Cl. 426-5.000.
Rue, Charles V.; and Narayanan, Kesh S., to Norton Company. Resin bonded abrasive bodies for snagging metal containing low abrasive and high filler content. 4,253,850, Cl. 51-298.000.
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Ruf, Walter: *See*—
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Ruspa, Giacomo; and Schellino, Giancarlo, to Centro Ricerche Fiat S.p.A. Exhaust silencer for earth moving machines. 4,253,542, Cl. 181-272.000.
Russell, Brian. Leg exercising device. 4,253,661, Cl. 272-96.000.
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Kloepfer, Vernon J.; and Russell, Jimmy B., 4,254,422, Cl. 343-792.000.
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Joret, Robert, 4,253,819, Cl. 431-208.000.
Sabatino, Daniel D.; and Wilkens, Henry W., to Flowtron Industries, Inc. Sealed flow meter for in-tank installation. 4,253,332, Cl. 73-224.000.
Sadakane, Katsuyuki: *See*—
Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa, 4,253,545, Cl. 182-240.000.
Sadatoshi, Hajime: *See*—
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Saiger, Gunther: *See*—
Sulzbacher, Horst; Stift, Kurt; and Saiger, Gunther, 4,254,167, Cl. 427-216.000.
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Kawamura, Yoshihisa; Inoue, Mitsumasa; and Saito, Masaaki, 4,253,441, Cl. 123-445.000.
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Compact electronic tuning device. 4,254,390, Cl. 334-85.000.
Saito, Sozo, to Kondo Sylvania Kabushiki Kaisha. Incandescent lamp. 4,254,358, Cl. 313-318.000.
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Otani, Masaru; Saito, Tetsu; Satoi, Shuzo; Mizoguchi, Junzo; and Muto, Naoki, 4,254,256, Cl. 536-18.000.
Sakamoto, Hitoshi, to Sony Corporation. Digital servo circuit. 4,254,367, Cl. 318-314.000.
Salomon, Georges P. J., to Etablissements Francois Salomon et Fils. Method for manufacturing a ski boot. 4,253,251, Cl. 36-119.000.
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Sampathkumar, Prathivadibhayankaram S.: *See*—
Dwivedi, Basant K.; and Sampathkumar, Prathivadibhayankaram S., 4,254,155, Cl. 426-548.000.
Sanders, Alfred P. Endothermal water decomposition unit for producing hydrogen and oxygen. 4,254,086, Cl. 422-187.000.
Sanders Associates, Inc.: *See*—
Burrows, James L., 4,254,476, Cl. 365-49.000.
Sanders, Bobby J.: *See*—
Nemit, Jeffrey T.; and Sanders, Bobby J., 4,254,386, Cl. 333-128.000.
Sandstrom, Richard D.: *See*—
Dutcher, Robert G.; O'Neill, Edward G.; and Sandstrom, Richard D., 4,253,462, Cl. 128-303.00R.
Sankyo Company Limited: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,254,274, Cl. 560-51.000.
Sansei Seiki Co., Ltd.: *See*—
Yada, Kazuaki, 4,253,902, Cl. 156-361.000.
Santa Barbara Avionics, Inc.: *See*—
Griffith, Phillip A., 4,254,458, Cl. 363-13.000.
Sanyo Trading Co., Ltd.: *See*—
Onizawa, Masao, 4,254,016, Cl. 260-45.85A.
Sarangi, Bhubaneswar: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Antiovulatory decapeptides. 4,253,997, Cl. 260-8.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Peptides related to somatostatin. 4,253,998, Cl. 260-8.000.
Sargent, Frank T. Trailer hitch carriage. 4,253,679, Cl. 280-405.00R.
Sarkozi, Miklos: *See*—
Yaroshuk, Nicholas; Sarkozi, Miklos; Miller, Robert C.; and Kennedy, Paul G., 4,253,768, Cl. 356-431.000.
Sarlls, Edward C., Jr., to Gilmore Valve Company. Cushioned shuttle valve. 4,253,481, Cl. 137-112.000.
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Sartorius GmbH: *See*—
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Sasaki, Takashi: *See*—
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Sasaki, Yukihiko: *See*—
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Sasuga, Tadashi: *See*—
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Sato, Akimone, to Kawasaki Steel Corporation. Method of marking hot material and apparatus therefor. 4,253,393, Cl. 101-35.000.
Sato, Atsushi: *See*—
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Sato, Hideo; Shimamune, Takayuki; Goto, Toshiki; and Nitta, Hideo, to Permelec Electrode Ltd. Electrode substrate alloy for use in electrolysis. 4,253,933, Cl. 204-293.000.
Sato, Masanori: *See*—
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,253,347, Cl. 74-862.000.
Sato, Shigeo. Tobacco filter and method of removing impurities from tobacco smoke. 4,253,476, Cl. 131-261.00B.
Sato, Takeshi: *See*—
Takamatsu, Toshio; Haga, Hiroyo; Aoki, Kazuo; and Sato, Takeshi, 4,254,323, Cl. 219-110.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure printing mechanism for hand labeler. 4,253,395, Cl. 101-292.000.
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Saudax, Pierre, to Motorola, Inc. Alarm circuit for car alternator. 4,254,396, Cl. 340-52.00R.
Sauer, Henry; and Lockhart, Steven A., to Jos. Schlitz Brewing Company. Valve control construction for a filling machine. 4,253,505, Cl. 141-147.000.
Saunderson, Allan: *See*—
Gates, Allen P.; and Saunderson, Allan, 4,254,244, Cl. 525-502.000.
Savage, Ronald E., to Halliburton Company. Setting tool. 4,253,521, Cl. 166-123.000.
Savin Corporation: *See*—
Landa, Benzion, 4,253,656, Cl. 271-293.000.
Saviski, Michael: *See*—
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Sawa, Seiji, to Minolta Camera Kabushiki Kaisha. Optical system for light measurement of an eye fund. 4,253,744, Cl. 351-16.000.
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Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; by Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, to Ricoh Company, Ltd. Pressure sensitive adhesive toner of clustered encapsulated porous particles for use in electrostatic photography. 4,254,201, Cl. 430-111.000.
Saxenmeyer, George J., Jr.: *See*—
Babuka, Robert; Heath, Robert E.; Saxenmeyer, George J., Jr.; and Schultz, Lewis K., 4,254,431, Cl. 357-82.000.

Sayre, Robert M.: *See*—
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Scerbo, Joseph: *See*—
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Schafer, Walter: *See*—
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Schafer, Wilhelm. Method and apparatus for clutch control in the operation of a ship's propulsion system having a diesel motor. 4,253,414, Cl. 440-84.000.
Schaffer, Daniel I.; and Elsinger, Carl R., to Commercial Affiliates, Inc. Carpet display system. 4,253,259, Cl. 40-492.000.
Schaffhauser, Anthony C.: *See*—
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Schal, Wilfred: *See*—
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Schellino, Giancarlo: *See*—
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Schenck, Hans-Uwe: *See*—
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Scherberich, Paul: *See*—
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Schering Aktiengesellschaft: *See*—
Heymann, Kurt; and Rolff, Rolf, 4,253,875, Cl. 106-1.260.
Schick, Lloyd A.; and Carpenter, Stephen K., to Miles Laboratories, Inc. Specific binding-adsorbent assay test means. 4,254,082, Cl. 422-55.000.
Schiele, Herbert: *See*—
Schlebusch, Ludwig; and Schiele, Herbert, 4,253,961, Cl. 210-380.300.
Schindler, Johannes G.; Schal, Wilfred; and Dr. Eduard Fresenius Chemisch-pharmazeutisch Industrie KG, Apparatebau KG. Artificial endocrinal gland. 4,253,456, Cl. 128-214.00R.
Schlebusch, Ludwig; and Schiele, Herbert, to Siebtechnik GmbH. Vibratory centrifuge for the dewatering of coal sludge. 4,253,961, Cl. 210-380.300.
Schlegel, Eberhard, to Georg Schlegel, Firma. Actuator with illuminated key for electric switching devices, particularly for control keys. 4,254,317, Cl. 200-314.000.
Schleich, Kuno; and Stoller, Hansjorg, to Hoffmann-La Roche Inc. Novel vitamin A acetate process. 4,254,281, Cl. 560-260.000.
Schleifenbaum, Karl, to Meteor-Siegen Apparatebau. Reprographic camera. 4,253,763, Cl. 355-57.000.
Schleiter, Daniel P., Sr., to Vapor Corporation. Magnetic latch for pressure relief valve. 4,253,489, Cl. 137-527.000.
Schlumberger Technology Corporation: *See*—
Young, David E., 4,253,525, Cl. 166-336.000.
Schmid, Wolfgang, to Ciba-Geigy Corporation. Growth promoting quinoxaline-di-N-oxide carboxamides. 4,254,120, Cl. 424-248.520.
Schmidt, Friedrich. Revolver. 4,253,261, Cl. 42-59.000.
Schmidt, Friedrich H.; Reuter, Fritz; and Radtke, Wolfgang, to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG. Ventilating and air conditioning arrangement. 4,253,384, Cl. 98-40.00R.
Schmidt, Ingo: *See*—
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Schmitt, Kirk D.: *See*—
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Schmitt, Raymond F.; Gaeddert, Melvin V.; and McWhirt, Bobby D., to Hesston Corporation. Twine actuated cutter in a rotary crop baler. 4,253,387, Cl. 100-5.000.
Schmoock, Roy F., to Fischer & Porter Co. Unitary electromagnetic flowmeter. 4,253,340, Cl. 73-861.120.
Schneider, George W., to Singer Company, The. Rotary meter. 4,253,333, Cl. 73-253.000.
Schneider, Heinz-Georg: *See*—
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,254,228, Cl. 521-128.000.
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Scholten, Frank L., to AM International, Inc. Photocomposer escapement carriage control. 4,254,371, Cl. 318-685.000.
Scholten, Joseph J. F.: *See*—
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Schoner, Philip J.: *See*—
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Schoofs, Franciscus A. C. M.: *See*—
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Schreiber, Batya R. G.: *See*—
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Schreiber, Ronald J.; and Schreiber, Batya R. G. Water pipes or bongs. 4,253,475, Cl. 131-173.000.
Schreiner, Donald G.: *See*—
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Schroder, Rolf: *See*—
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Schroeck, Calvin W., to Lubrizol Corporation, The. Amine salts of acidic microbial polysaccharides and their use in recovery of such polysaccharides. 4,254,257, Cl. 536-52.000.
Schroeder, George O., to American Can Company. Multi-layer barrier film. 4,254,169, Cl. 428-35.000.
Schubert, John C., to Standard Oil Company (Indiana). Fast food container. 4,253,600, Cl. 229-2.50R.
Schultz, Lewis K.: *See*—
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Schulze, Clayton E. Spreader for cinders and the like. 4,253,612, Cl. 239-672.000.
Schulze, Eckehart, to Hartmann & Lammle GmbH & Co. Electrohydraulic follow-up control apparatus. 4,253,358, Cl. 82-5.000.
Schurig, Helmut: *See*—
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Schurter, Rolf; and Rempfler, Hermann, to Ciba-Geigy Corporation. Methyl α-[4-(6'-methyl-5'-carbothiamido-pyrid-2'-yl)-oxy-phenoxy]-proprionate. 4,253,866, Cl. 71-94.000.
Schutte, Holger: *See*—
Burkhardt, Hans; Metzdorff, Walter; and Schutte, Holger, 4,254,399, Cl. 340-146.3MA.
Schuurs, Antonius H. W. M.; and Leuvering, Johannes H. W., to Akzona Incorporated. Apparatus for colorimetric determination. 4,254,223, Cl. 435-296.000.
Schwab, Dittmar; Bartels, Hermann; and Graf, Walter, to YMOS-Metallwerke Wolf & Becker GmbH & Co. Magnetic lock. 4,253,320, Cl. 70-276.000.
Schwab, Milton I.: *See*—
Spitz, Albert W.; and Schwab, Milton I., 4,253,406, Cl. 110-241.000.
Schwartz, Harold O.: *See*—
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Schwarz, Ulrich: *See*—
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Schweitzer Industrial Corporation: *See*—
Bradshaw, Norman F., 4,253,821, Cl. 432-2.000.
Schwerko, Albert P.: *See*—
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Schwindt, Jurgen; Grogler, Gerhard; and Uhrhan, Paul, to Bayer Aktiengesellschaft. Polyurethane plastics containing thio groups. 4,254,229, Cl. 521-163.000.
Sclavo, S.p.A.: *See*—
Meiattini, Franco, 4,254,220, Cl. 435-14.000.
SCM Corporation: *See*—
Abbey, Kirk J., 4,254,004, Cl. 260-29.60R.
Hart, Vicki L., 4,254,073, Cl. 260-927.00R.
Kane, Bernard J., 4,254,291, Cl. 568-875.000.
Turpin, Edward T., 4,254,235, Cl. 525-162.000.
Scott, Douglas S., to Robertshaw Controls Company. Pneumatic control means for a vehicle heat exchanger system or the like. 4,253,604, Cl. 236-87.000.
Scott & Fetzer Company: *See*—
McKee, Donald S., 4,253,689, Cl. 292-338.000.
Scott, Michael J.: *See*—
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Scottdel, Inc.: *See*—
Carson, William S., III; Carson, Louis A.; Carson, Christopher E.; and Friedrich, Larry, 4,254,179, Cl. 428-311.000.
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Katz, David H., 4,253,995, Cl. 260-6.000.
Katz, David H., 4,253,996, Cl. 260-6.000.
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., to Letraset USA Inc. Production of transfer material. 4,254,211, Cl. 430-325.000.
Seal Spout International: *See*—
Taddei, Carlo, 4,253,837, Cl. 493-86.000.
Sealfon, Andrew I.: *See*—
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Searle, Robert J. G.: *See*—
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,254,057, Cl. 564-455.000.
Sederholm, Emma L.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; and Terry, Angel F., 4,254,329, Cl. 235-379.000.
Seeger, Karl; Ruf, Walter; Sohner, Gerhard; and Jundt, Werner, to Robert Bosch GmbH. Internal combustion engine ignition system. 4,253,443, Cl. 123-609.000.

Seel, Holger, to Autoflug GmbH. Vehicle-sensitive blocking device. 4,253,621, Cl. 242-107.40A.
Seeley, Douglas A.; and Kamhi, Victor M., to American Hoechst Corporation. Method of preparing lithoplates and plate. 4,254,196, Cl. 430-17.000.
Seeley, Forest G.: *See*—
McDowell, William J.; and Seeley, Forest G., 4,254,088, Cl. 423-112.000.
Seemann, Ronald W., to Minnesota Mining and Manufacturing Company. Resin-containing cartridges and process for sealing solid structures or for anchoring bolts and rods therein. 4,253,566, Cl. 206-220.000.
Segawa, Yorihide; Fujisawa, Fumio; and Shiohata, Koki, to Hitachi, Ltd. Wheel or rotor with a plurality of blades. 4,253,800, Cl. 416-203.000.
Segawa, Yoshihiro: *See*—
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Seiler, Werner: *See*—
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Sekida, Minoru; Fujii, Akira; Kobori, Toshio; and Teramoto, Tougo, to Minolta Camera Kabushiki Kaisha. Camera shutter. 4,253,755, Cl. 354-242.000.
Sekiguchi, Kouichi; and Takano, Toshiichi, to Iwasaki Tsushinki Kabushiki Kaisha. Key telephone system. 4,254,306, Cl. 179-99.00R.
Sekiya, Setsuro: *See*—
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Selby, Thomas: *See*—
Campaigne, Ernest E.; and Selby, Thomas, 4,254,259, Cl. 544-8.000.
Sellmaier, Engelbert. Gauge. 4,253,339, Cl. 73-732.000.
Serino, Louis J., to Xerox Corporation. Printed circuit board component mounting support and spacer. 4,254,301, Cl. 174-138.00G.
Serwatzky, Gunter: *See*—
Abel, Otto; Giertz, Hans-Josef; Hoppe, Joachim; Eisenhut, Werner; Sarangi, Bhubaneswar; and Serwatzky, Gunter, 4,254,338, Cl. 250-340.000.
Sestanj, Kazimir, to Ayerst, McKenna & Harrison Inc. Thioxo-1H-benz[de]isoquinoline-2(3H)-acetic acid derivatives and antidiabetic use thereof. 4,254,108, Cl. 424-178.000.
Sestanj, Kazimir, to Ayerst, McKenna & Harrison Inc. 1H-Benz-[de]isoquinoline-2(3H)-acetic acid derivatives. 4,254,109, Cl. 424-178.000.
Setterberg, John R., Jr., to Otis Engineering Corporation. Gravel pack tool. 4,253,522, Cl. 166-278.000.
Shamblee, Dwight A.: *See*—
Walsh, David A.; and Shamblee, Dwight A., 4,254,135, Cl. 424-274.000.
Shannon, Brian. Indicator arrangement. 4,254,397, Cl. 340-56.000.
Sharki, Martin J.; Rehm, William A.; and Renfro, Woodrow E., to Dresser Industries, Inc. Method and system for circulating a gas bubble from a well. 4,253,530, Cl. 175-25.000.
Sharp Kabushiki Kaisha: *See*—
Maeda, Hidetoshi, 4,254,494, Cl. 368-187.000.
Masuda, Toshiyuki; and Sasaki, Takehiko, 4,254,486, Cl. 368-29.000.
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Sharp, Paul H.: *See*—
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Shaver, William R.: *See*—
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Shearon, Lawrence W.: *See*—
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Sheingorn, Larry A. Marcus-Gunn quantitator. 4,253,470, Cl. 128-745.000.
Sheldon, John D., to Textron, Inc. Filament type trimmer. 4,253,238, Cl. 30-276.000.
Shell Oil Company: *See*—
Blytas, George C.; Maas, Rudolf J.; van Aken, Andreas B.; and van Schalkwijk, Christiaan, 4,253,928, Cl. 204-180.00P.
Day, Janet A.; Devlin, Barry R. J.; and Searle, Robert J. G., 4,254,057, Cl. 564-455.000.
Roman, Steven A.; and Soloway, Samuel B., 4,254,277, Cl. 560-118.000.
Syrier, Johannes, 4,254,280, Cl. 560-231.000.
van Zon, Arie, 4,254,034, Cl. 260-338.000.
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Shelley, Lawrence E.: *See*—
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Shelley, Robert D.: *See*—
Graff, William A.; and Shelley, Robert D., 4,253,861, Cl. 65-30.00E.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. 2,2-Dialkyltetrahydropyrans. 4,254,037, Cl. 260-345.100.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. 2,2-Dialkyltetrahydropyrans. 4,254,038, Cl. 260-345.100.
Shepherd, Robert G., to American Cyanamid Company. Esters of 4-(monoalkylamino)benzoic hydroxyalkanoic acids. 4,254,138, Cl. 424-283.000.
Sherbondy, Frank Y. Air diffuser. 4,253,858, Cl. 55-419.000.
Sherer, Thomas L.: *See*—
Flowers, Ralph G.; Sherer, Thomas L.; and Anderson, Robert P., 4,254,231, Cl. 525-58.000.
Sherman, Kay: *See*—
Sherman, Paul L.; and Sherman, Kay, 4,253,631, Cl. 248-363.000.
Sherman, Paul L.; and Sherman, Kay. Mounting member for vacuum production of printshop paste-ups. 4,253,631, Cl. 248-363.000.
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Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,253,916, Cl. 204-14.00R.
Shim, Jaewon L.: *See*—
Cottrell, Ian W.; Baird, John K.; and Shim, Jaewon L., 4,254,249, Cl. 526-303.000.
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Sato, Hideo; Shimamune, Takayuki; Goto, Toshiki; and Nitta, Hideo, 4,253,933, Cl. 204-293.000.
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Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,253,760, Cl. 355-14.0CU.
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Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,254,225, Cl. 435-96.000.
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Yamada, Yoji; Nishimura, Sadanori; Shimizu, Takeyuki; and Maezono, Masakazu, 4,253,553, Cl. 192-3.620.
Shimohira, Koichi. Spiral plane bit and rotary cutter incorporating same. 4,253,506, Cl. 144-221.000.
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Segawa, Yorihide; Fujisawa, Fumio; and Shiohata, Koki, 4,253,800, Cl. 416-203.000.
Shionogi & Co., Ltd.: *See*—
Hamashima, Yoshio; and Nagata, Wataru, 4,254,119, Cl. 424-246.000.
Shirai, Kazuhiko: *See*—
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, 4,253,341, Cl. 73-861.770.
Shiseido Co., Ltd.: *See*—
Suzuki, Takashi, 4,254,104, Cl. 424-170.000.
Shockley, William R.: *See*—
Noddin, Kenneth W., 4,254,419, Cl. 343-715.000.
Shook, Norma G.: *See*—
Hakes, Gary A.; Shook, Norma G.; Cackley, George W.; Burdette, Stephen D.; and Morris, Hugh C., 4,253,555, Cl. 192-13.00R.
Shultz, Fred T.: *See*—
Lockwood, George S.; Shultz, Fred T.; and Bevelander, Gerrit, 4,253,418, Cl. 119-2.000.
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Schlebusch, Ludwig; and Schiele, Herbert, 4,253,961, Cl. 210-380.300.
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Kummerow, Gerd; and Prietzel, Gunter, 4,254,314, Cl. 200-144.00R.
Moser, Otto W.; and Thilo, Peer, 4,254,411, Cl. 340-517.000.
Steinmuller, Gunter, 4,254,376, Cl. 324-142.000.
Thomann, Helmut; and Grabmaier, Christa, 4,254,200, Cl. 430-84.000.
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Baud, Raoul, 4,254,334, Cl. 250-231.00R.
Sieradzan, Andrzej: *See*—
Krasinski, Jerzy; and Sieradzan, Andrzej, 4,253,733, Cl. 350-380.000.
SIG Schweizerische Industrie-Gesellschaft: *See*—
Loewenthal, Horst, 4,253,293, Cl. 53-537.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-4,5-didehydro-PGI$_1$ compounds. 4,254,040, Cl. 260-346.220.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-5-hydroxy-PGI compounds. 4,254,041, Cl. 260-346.220.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-4,5-didehydro-PGI$_1$ compounds. 4,254,042, Cl. 260-346.220.
Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-19-hydroxy-6a-carba-PGI$_2$ compounds. 4,254,058, Cl. 260-563.00P.
Simmons, Robert B., to PPG Industries, Inc. Method of preparing a diaphragm having a gel of a hydrous oxide or zirconium in a porous matrix. 4,253,935, Cl. 204-295.000.

Simon, David J.: *See*—
Duckworth, James J.; and Simon, David J., 4,254,369, Cl. 318-654.000.
Simpson, Lawrence D.: *See*—
Du Bois, Loring E.; and Simpson, Lawrence D., 4,253,280, Cl. 51-283.00R.
Sims, Robert L. Railway crossing structure. 4,253,605, Cl. 238-8.000.
Singer Company, The: *See*—
Danon, Joseph S.; and Kwast, Theodore E., 4,253,484, Cl. 137-269.000.
Duckworth, James J.; and Simon, David J., 4,254,369, Cl. 318-654.000.
Schneider, George W., 4,253,333, Cl. 73-253.000.
Sisk, George W., Jr., to Whirlpool Corporation. Liquid level control. 4,254,311, Cl. 200-61.070.
Skaalen, Clifford I.; and Rausch, Arthur B., to United States of America, Navy. Portable personnel platform and ladder. 4,253,547, Cl. 182-115.000.
SKF Kugellagerfabriken GmbH: *See*—
Munnich, Hermann; and Glockner, Hermann, 4,253,326, Cl. 73-10.000.
Slater, Paul; and Scott, Michael J., to Delta Plastics Limited. Liquid flow sensing devices. 4,253,421, Cl. 119-14.080.
Slavens, Clyde M., to Midcon Pipeline Equipment Co. Pipe welding clamp including pipe end spacing means. 4,253,599, Cl. 228-49.00B.
Sloan Kettering Institute for Cancer Research: *See*—
Eisinger, Magdalena G.; and Hefton, John M., 4,254,226, Cl. 435-240.000.
Slomkowski, Jaroslaw: *See*—
Markowski, Kazimierz; Truszkowski, Jacek; Niedzielski, Wojciech; and Slomkowski, Jaroslaw, 4,254,484, Cl. 367-115.000.
Slovinsky, Manuel: *See*—
Zakaria, Moneeb; and Slovinsky, Manuel, 4,253,994, Cl. 260-5.000.
Smernoff, Ronald B., to Analytical Products, Inc. Gas-liquid equilibration apparatus. 4,253,845, Cl. 23-230.00B.
Smith, David F. Plaster of Paris bandages with controlled properties from synergistically set-delayed aqueous slurries. 4,253,450, Cl. 128-91.00R.
Smith, Derrick A. Solar power generator and water purifier. 4,253,307, Cl. 60-641.000.
Smith, Derrick A. Apparatus for the recovery of useful heat from refrigeration gases. 4,253,312, Cl. 62-238.00E.
Smith, Francis S.: *See*—
Capaccio, Giancarlo; Smith, Francis S.; and Ward, Ian M., 4,254,072, Cl. 264-210.300.
Smith, Henry I.: *See*—
Flanders, Dale C.; Smith, Henry I.; and DaLomba, Muriel A., 4,254,174, Cl. 428-209.000.
Smith International, Inc.: *See*—
Baker, William, III, 4,253,533, Cl. 175-329.000.
Geczy, Bela, 4,253,532, Cl. 175-107.000.
Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corp. Metal acetylacetonate latent accelerators for an epoxy-styrene resin system. 4,254,351, Cl. 310-45.000.
Smith, John L.: *See*—
Miller, Stewart M.; and Smith, John L., 4,254,261, Cl. 546-203.000.
Smith, Richard L.: *See*—
Martin, Luther W.; and Smith, Richard L., 4,253,497, Cl. 138-97.000.
Smith, Robert A.: *See*—
Raynes, Edward P.; and Smith, Robert A., 4,253,740, Cl. 350-350.00R.
Smith, Robert J.: *See*—
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.
Smith, Stanley E., to General Motors Corporation. Automatic sewing apparatus for air cushions. 4,253,413, Cl. 112-262.300.
Smith, William E.: *See*—
Chambers, Gregory R.; and Smith, William E., 4,254,290, Cl. 568-866.000.
Smither, Miles A.; and Vela, Octavio A., to Sperry-Sun, Inc. Borehole telemetry system automatic gain control. 4,254,481, Cl. 367-82.000.
SmithKline Corporation: *See*—
Brush, Charles K.; and Weinstock, Joseph, 4,254,140, Cl. 424-285.000.
Smythe, William J.; Isreeli, Jack; and Pelavin, Milton H., to Technicon Instruments Corporation. Method and apparatus for automated analysis of fluid samples. 4,253,846, Cl. 23-230.00R.
Snamprogetti S.p.A.: *See*—
Manara, Giovanni; Fattore, Vittorio; Taramasso, Marco; and Notari, Bruno, 4,254,296, Cl. 585-640.000.
Snow, William E.: *See*—
Phelps, Edwin H.; and Snow, William E., 4,254,165, Cl. 427-183.000.
Snyder, Paul V., to General Electric Company. Electric oven toaster construction. 4,254,325, Cl. 219-413.000.
S.p.A. Luigi Rizzi & C.: *See*—
Repetto, Silvio, 4,253,318, Cl. 69-9.100.
Societe Anonyme Francaise du Ferodo: *See*—
Dauvergne, Jean Louis R., 4,253,305, Cl. 60-550.000.
Societe d'Etudes de Produits Chimiques: *See*—
Esanu, Andre, 4,254,162, Cl. 424-275.000.
Societe Nationale des Poudres et Explosifs: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Lecolier, Serge L.; and Raynal, Serge F., 4,254,247, Cl. 526-180.000.
Soejima, Shigeo; and Yamamoto, Noboru, to NGK Insulators, Ltd. Ceramic honeycomb composite structure, catalyst supported thereby and method of producing the same. 4,253,992, Cl. 252-477.00R.
Sohner, Gerhard: *See*—
Jundt, Werner; Bodig, Bernd; Hohne, Gerd; Pfaff, Georg; Sohner, Gerhard; and Kalkhof, Bernd, 4,253,442, Cl. 123-618.000.
Seeger, Karl; Ruf, Walter; Sohner, Gerhard; and Jundt, Werner, 4,253,443, Cl. 123-609.000.
Sokolov, Mordechai, to Ramot University Authority for Applied Research & Industrial Develop. Ltd. Method and apparatus for air conditioning motor vehicles. 4,253,310, Cl. 62-79.000.
Solartron Electronic Group Limited, The: *See*—
Ashford, David W.; Davies, William B.; and Hartley, Sydney S., 4,253,249, Cl. 434-22.000.
Solomin, Vladimir A.: *See*—
Bocharov, Vasily I.; Kuprianov, Jury V.; Popov, Alexandr D.; and Solomin, Vladimir A., 4,254,349, Cl. 310-13.000.
Miroshnichenko, Vitaly T.; Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A., 4,254,350, Cl. 310-13.000.
Solomon, Alan. Surgical drape. 4,253,451, Cl. 128-132.00D.
Soloway, Samuel B.: *See*—
Roman, Steven A.; and Soloway, Samuel B., 4,254,277, Cl. 560-118.000.
Sondell, Kent I.: *See*—
Hillstrom, Per A. R.; and Sondell, Kent I., 4,253,911, Cl. 162-30.00R.
Sonobe, Shigeru: *See*—
Kato, Iwao; and Sonobe, Shigeru, 4,253,765, Cl. 356-328.000.
Sony Corporation: *See*—
Kojima, Chiaki; Otobe, Takashi; and Ohki, Hiroshi, 4,253,723, Cl. 350-3.720.
Sakamoto, Hitoshi, 4,254,367, Cl. 318-314.000.
Suzuki, Toshio, 4,254,434, Cl. 358-147.000.
Sorensen, Peter H. Key holder. 4,253,321, Cl. 70-456.00R.
Souza, Anthony J., to Woodstream Corporation. Repeating animal trap. 4,253,264, Cl. 43-73.000.
Spaepen, Gustaaf J. F.: *See*—
Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., 4,253,936, Cl. 204-296.000.
Sparks, John E.: *See*—
Jackson, Richard E.; and Sparks, John E., 4,253,855, Cl. 55-290.000.
Special Metals Corporation: *See*—
Maurer, Gernant E.; and Boesch, William J., 4,253,884, Cl. 148-13.100.
Maurer, Gernant E.; and Boesch, William J., 4,253,885, Cl. 148-13.100.
Specialty Composites Corporation: *See*—
Powers, William R.; and Lotter, William H., Jr., 4,253,452, Cl. 128-152.000.
Speiser, Jeffrey M., to United States of America, Navy. Beamformer for arrays with rotational symmetry. 4,254,417, Cl. 343-100.0SA.
Sperling, L. H.; Manson, J. A.; and Devia-Manjarres, N. Tough plastics based on castor oil elastomer-reinforced vinyl polymers. 4,254,002, Cl. 260-23.0ST.
Sperry Corporation: *See*—
Campbell, Willis R.; Greaser, Randy; and Clevenger, James T., Jr., 4,253,389, Cl. 100-5.000.
Cronson, Harry M.; Ross, Gerald F.; Rao, Basrur R.; Lerchenmueller, Werner; and Drew, Prentis B., 4,254,418, Cl. 343-112.0CA.
Griffith, Ernest S.; and Davis, William W., 4,254,501, Cl. 375-9.000.
Knepper, Larimer J., 4,253,295, Cl. 56-15.600.
Rayfield, James F., 4,253,472, Cl. 130-27.00S.
Sperry, Peter R.: *See*—
Emmons, William D.; Sperry, Peter R.; and Kaplan, Fred A., 4,253,397, Cl. 101-450.100.
Sperry-Sun, Inc.: *See*—
Smither, Miles A.; and Vela, Octavio A., 4,254,481, Cl. 367-82.000.
Spietschka, Ernst; Urban, Manfred; and Paulus, Erich, to Hoechst Aktiengesellschaft. Process for the fine distribution of pigments of the dioxazine series. 4,253,839, Cl. 8-565.000.
Spigarelli, Rudolph D., to Kansas City Southern Railway Company. Railway locomotive fuel saving arrangement. 4,253,399, Cl. 105-62.00R.
Spitz, Albert W.; and Schwab, Milton I., to Milpat Corporation. Flueless combustion chamber. 4,253,406, Cl. 110-241.000.
Sprague, Peter W., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane- and 7-oxabicycloheptene compounds. 4,254,044, Cl. 260-347.800.
Square D Company: *See*—
Jurek, Dennis J., 4,254,466, Cl. 364-477.000.
Square S.p.A.: *See*—
Roma, Carlo, 4,253,938, Cl. 208-11.00R.
Squassoni, Gino F.: *See*—
Landheer, Dolf; Hwang, Shy-Shung; Nesta, Charles; and Squassoni, Gino F., 4,254,424, Cl. 346-139.00C.
Stafford, William G. Wallpaper preparation board. 4,253,596, Cl. 225-18.000.
Stahlberg, Eugene G.: *See*—
Brandon, Fred Y.; Chang, Jack P.; Clark, William D.; and Stahlberg, Eugene G., 4,253,392, Cl. 100-155.00R.
Stahlwerke Rochling-Burbach Gesellschaft mit beschrankter Haftung: *See*—
Andres, Adolf, 4,253,647, Cl. 266-271.000.

Stamicarbon, B.V.: *See*—
Frenken, Petrus M. G.; and Scholten, Joseph J. F., 4,254,297, Cl. 585-640.000.
Standard Oil Company: *See*—
Hardman, Harley F.; and Schwerko, Albert P., 4,253,948, Cl. 210-634.000.
Standard Oil Company (Indiana): *See*—
French, William S., 4,254,480, Cl. 367-58.000.
Schubert, John C., 4,253,600, Cl. 229-2.50R.
Valcho, Joseph J.; and Karll, Robert E., 4,253,974, Cl. 252-8.55D.
Stanger, Leon J.: *See*—
Dayton, Birney D.; Rorden, William L.; and Stanger, Leon J., 4,254,435, Cl. 358-155.000.
Stappaerts, Eddy A., to Northrop Corporation. Tunable ultra-violet generator for use in the isotope separation of deuterium. 4,254,348, Cl. 307-426.000.
Staubli, Peter E. Rider clip with offset retention flaps and retention bar for denture. 4,253,834, Cl. 433-173.000.
Stauffer, Norman L.; and Wilwerding, Dennis J., to Honeywell Inc. Low frequency enhancement range finding equipment. 4,254,330, Cl. 250-201.000.
Steger, Charles B.; and Reid, Kenneth H., to General Motors Corporation. Lockbar release for inertia locking seat belt retractor. 4,253,623, Cl. 242-107.40A.
Stein, Manfred: *See*—
Haub, Martin; and Stein, Manfred, 4,254,491, Cl. 368-85.000.
Steiner, Robert S.: *See*—
Franklin, Robert L.; and Steiner, Robert S., 4,253,263, Cl. 43-42.240.
Steinhilber, Helmut. Apparatus for feeding paper to a printing office machine. 4,253,652, Cl. 271-8.00R.
Steinmuller, Gunter, to Siemens Aktiengesellschaft. Apparatus for measuring the electric power or energy in an A-C network. 4,254,376, Cl. 324-142.000.
Steinwart, Johannes; and Ruf, Max, to Audi NSU Auto Union Aktiengesellschaft. Rotary compressor. 4,253,805, Cl. 418-54.000.
Stellar Systems: *See*—
Mongeon, Ronald W., 4,254,413, Cl. 340-561.000.
Stendel, Wilhelm: *See*—
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; Behrenz, Wolfgang; and Stendel, Wilhelm, 4,254,113, Cl. 424-200.000.
Stephen-Daly, Paul. Forming decorated articles. 4,253,908, Cl. 156-645.000.
Stephens, William T., to Gresen Manufacturing Company. Hydraulic valve having pressure compensated demand flow. 4,253,482, Cl. 137-117.000.
Sterling, Jeffrey: *See*—
Weiner, Ben-Zion; Suchi, Raul; Sterling, Jeffrey; and Yellin, Haim, 4,254,128, Cl. 424-267.000.
Stevens, Curtis R., to Master Specialties Company. Back-lighted push-button switch with safety stop. 4,254,315, Cl. 200-153.00J.
Stevens, Richard: *See*—
Redwood, Martin; Stevens, Richard; White, Philip D.; and Mitchell, Richard F., 4,254,387, Cl. 333-194.000.
Stewart, David S., to True-Line Mold & Engineering Corporation. CRT Socket. 4,253,717, Cl. 339-14.00T.
Stewart, John M; and Morris, Dan H., to Pennwalt Corporation. Synthesis of peptide alcohols by the solid phase method. 4,254,023, Cl. 260-112.50R.
Stewart, John M.; Morris, Dan H.; and Chipkin, Richard E., to Pennwalt Corporation. Tetrapeptides and derivatives having opiate activity. 4,254,024, Cl. 260-112.50R.
Stift, Kurt: *See*—
Sulzbacher, Horst; Stift, Kurt; and Saiger, Gunther, 4,254,167, Cl. 427-216.000.
Stinton, Frederick M.; and Weikert, William C., to Martin Concrete Engineering Company. Concrete railroad tie casting and handling system. 4,253,817, Cl. 425-447.000.
Stoller, Hansjorg: *See*—
Schleich, Kuno; and Stoller, Hansjorg, 4,254,281, Cl. 560-260.000.
Stolley, Dieter: *See*—
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Strasser, Bernd: *See*—
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Straub, Ferdinand; Schenck, Hans-Uwe; Lang, Siegfried; and Brode, Egon, to BASF Aktiengesellschaft. Biodegradable vinylpyrrolidone polymers, their manufacture and use. 4,254,239, Cl. 525-123.000.
Streczyn, Michael V.; Luther, Ronald B.; and Doyle, Daniel L., to Research Partners Limited. Blood oxygenator. 4,254,081, Cl. 422-46.000.
Street, Thomas T.; and Alexander, John I., to United States of America, Navy. Processor-aided fire detector. 4,254,414, Cl. 340-627.000.
Streich, Steven: *See*—
Baker, Eugene E.; and Streich, Steven, 4,253,676, Cl. 277-34.600.
Strickland, Danny L.; and Visscher, Ronald B., to Procter & Gamble Company, The. Absorbent brief. 4,253,461, Cl. 128-287.000.
Stroh, Walter: *See*—
Will, Gerhard; and Stroh, Walter, 4,253,348, Cl. 74-866.000.
Stroman, Fritz: *See*—
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,254,269, Cl. 549-59.000.
Strong, Henry L., to American Cyanamid Company. Process for preparation 4,5,6,7-tetrahydro-7-oxobenzo-[b]-thiophenes and 1,2,3,4-tetrahydro-4-oxo-1-naphthalenes. 4,254,268, Cl. 549-51.000.
Studiecentrum voor Kernenergie, S.C.K.: *See*—
Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., 4,253,936, Cl. 204-296.000.
Suchi, Raul: *See*—
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Sud-Chemie Aktiengesellschaft: *See*—
Kanzler, Karl-Heinz, deceased; and Kochloefl, Karl, 4,253,991, Cl. 252-455.00R.
Sugiura, Eiichi. Centrifugal pump. 4,253,798, Cl. 415-213.00R.
Sulicz, James J.: *See*—
Marshall, John M.; Veslocki, Timothy A.; and Sulicz, James J., 4,253,644, Cl. 266-44.000.
Sullivan, Dennis W., to Red Fox Industries Inc. Marine sewage disposal. 4,253,957, Cl. 210-195.300.
Sullivan, James F.; and Arnold, Loren G., to Deere & Company. Pivoting dual land wheel for a plow. 4,253,528, Cl. 172-386.000.
Sullivan, Richard A. Reversible flexible aerodynamic disc. 4,253,269, Cl. 46-74.00D.
Sullivan, Robert P., to Combustion Engineering, Inc. System for controlling the flow of gaseous fluids. 4,253,492, Cl. 137-601.000.
Sulzbacher, Horst; Stift, Kurt; and Saiger, Gunther, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Process for treating sponge iron for protection against reoxidation and apparatus for carrying out the process. 4,254,167, Cl. 427-216.000.
Sumitomo Chemical Company, Limited: *See*—
Shiga, Akitsubu; Kakugo, Masahiro; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,254,237, Cl. 525-323.000.
Sumitomo Electric Industries, Ltd.: *See*—
Takata, Koji, 4,253,707, Cl. 303-6.00C.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Fuel supply apparatus for internal combustion engines. 4,253,440, Cl. 123-442.000.
Sumrell, Gene: *See*—
Bailey, August V.; and Sumrell, Gene, 4,254,022, Cl. 260-112.00R.
Sun-Flex Company: *See*—
Thomsen, Erik J.; and Brennan, Patrick W., 4,253,737, Cl. 350-276.00R.
Sun Petroleum Products Company: *See*—
Hansel, William B., 4,253,490, Cl. 137-590.000.
Sundberg, John E.: *See*—
Hyer, Harry J.; and Sundberg, John E., 4,254,055, Cl. 260-513.500.
Sunder, Shyam; Daniel, John K.; and Peet, Norton P., to Dow Chemical Company, The. 2-Chloro-3-phenoxypyrazines and 2-chloro-6-phenoxypyrazines possessing antiviral activity. 4,254,125, Cl. 424-250.000.
Sunnen Products Company: *See*—
Althen, Wayne W., 4,253,279, Cl. 51-1.000.
Surgical Design Corporation: *See*—
Banko, Anton, 4,253,199, Cl. 3-13.000.
Suzuki, Sadamasa: *See*—
Kobayashi, Hisamine; Kawasaki, Motoo; Mizumoto, Shozo; Nawafune, Hidemi; and Suzuki, Sadamasa, 4,253,916, Cl. 204-14.00R.
Suzuki, Satomi: *See*—
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,253,347, Cl. 74-862.000.
Suzuki, Shigeto: *See*—
Wall, Robert G.; Suzuki, Shigeto; and Wilkes, John B., 4,254,289, Cl. 568-857.000.
Suzuki, Shin-ichi: *See*—
Tsukagoshi, Tsunehiro; Suzuki, Shin-ichi; and Ogino, Hitomi, 4,254,184, Cl. 428-408.000.
Suzuki, Takashi, to Shiseido Co., Ltd. Process for preparing stable oil-in-water emulsions. 4,254,104, Cl. 424-170.000.
Suzuki, Toshio, to Sony Corporation. Video signal mixing system. 4,254,434, Cl. 358-147.000.
Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,254,195, Cl. 430-17.000.
Svendsen, Eivind C. K., to Elkem-Spigerverket A/S. Direct current smelting furnace. 4,254,298, Cl. 13-12.000.
Swartz, Benjamin E. Preformed manhole base section construction. 4,253,282, Cl. 52-20.000.
Swiatosz, Edmund, to United States of America, Navy. Integrated circuit temperature gradient and moisture regulator. 4,253,515, Cl. 165-61.000.
Swiss Aluminium Ltd.: *See*—
Bloeck, Siegfried; and Luthi, Rudolf, 4,253,584, Cl. 220-359.000.
Switala, Gary P. Lighted tray apparatus. 4,254,452, Cl. 362-154.000.
Sybron Corporation: *See*—
Jordan, James R., 4,254,470, Cl. 364-577.000.
Symbol, Paul P. Impact wrench for hexagonal nuts. 4,253,353, Cl. 81-121.00R.
Syrier, Johannes, to Shell Oil Company. Cyclopropane derivative. 4,254,280, Cl. 560-231.000.
Sysko, Robert J.: *See*—
Glowaky, Raymond C.; Kurowsky, Steven R.; and Sysko, Robert J., 4,254,250, Cl. 525-350.000.
Tabak, Samuel A., to Mobil Oil Corporation. Oligomerization of olefins. 4,254,295, Cl. 585-533.000.

Tada, Eiji, to Kabushiki Kaisha Tada Seisakùsho. Printing apparatus. 4,253,394, Cl. 101-250.000.

Taddei, Carlo, to Seal Spout International. Method and apparatus for applying a metal strip to a sheet material. 4,253,837, Cl. 493-86.000.

Tafara, Peter T. Liquid filter vessel. 4,253,959, Cl. 210-232.000.

Tago, Minoru: *See*—
Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, 4,254,225, Cl. 435-96.000.

Taguchi, Masahiko: *See*—
Uchida, Takashi; Sasaki, Takashi; Kikuchi, Shoji; Mogaki, Katsuo; Taguchi, Masahiko; and Takada, Syun, 4,254,216, Cl. 430-551.000.

Taira, Akio, to Olympus Optical Co., Ltd. Transmission type illumination equipment for microscopes. 4,253,726, Cl. 350-87.000.

Takada, Syun: *See*—
Uchida, Takashi; Sasaki, Takashi; Kikuchi, Shoji; Mogaki, Katsuo; Taguchi, Masahiko; and Takada, Syun, 4,254,216, Cl. 430-551.000.

Takagi, Kazuo: *See*—
Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, 4,253,620, Cl. 242-107.000.

Takahashi, Akira, to Ricoh Company, Ltd. Data entering camera. 4,253,753, Cl. 354-106.000.

Takahashi, Hiroshi; Nakao, Kiyoshi; and Katagiri, Masaaki, to Hitachi Chemical Co., Ltd. Baseboard for printed circuit board. 4,254,172, Cl. 428-131.000.

Takahashi, Shigeo: *See*—
Mizuno, Kiyofumi; Maeda, Hiroaki; Takahashi, Shigeo; Sato, Masanori; and Suzuki, Satomi, 4,253,347, Cl. 74-862.000.

Takahashi, Tatsuro: *See*—
Tawara, Kanzi; Hamazato, Kazuo; Takahashi, Tatsuro; and Egawa, Tetsuaki, 4,254,498, Cl. 370-63.000.

Takamatsu, Toshio; Haga, Hiroyo; Aoki, Kazuo; and Sato, Takeshi, to Nippon Steel Corporation. Apparatus for monitoring and controlling a welding phenomenon in an electric resistance welding. 4,254,323, Cl. 219-110.000.

Takamizawa, Kinya: *See*—
Iinuma, Kazuhiro; Kidokoro, Takeshi; and Takamizawa, Kinya, 4,253,338, Cl. 73-626.000.

Takano, Toshiichi: *See*—
Sekiguchi, Kouichi; and Takano, Toshiichi, 4,254,306, Cl. 179-99.00R.

Takashima, Toshiyuki: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,254,282, Cl. 562-506.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,117, Cl. 424-246.000.
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,254,260, Cl. 544-27.000.

Takata, Koji, to Sumitomo Electric Industries, Ltd. Brake pressure control device. 4,253,707, Cl. 303-6.00C.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. 7-(α,α-Disubstituted-acetemido)-3-substituted-3-cephem-4-carboxylic acids. 4,254,117, Cl. 424-246.000.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. 3-Substituted-7-substituted alkanamido-3-cephem-4-carboxylic acid compounds. 4,254,260, Cl. 544-27.000.

Takeda, Keizi; Matsumoto, Kenji; and Nagata, Masayoshi, to Fuji Photo Film Co., Ltd. Photographic materials for non-silver images and process for forming non-silver images. 4,254,214, Cl. 430-415.000.

Takeda, Tadashi. Method for mounting up a plastic fastener. 4,253,226, Cl. 29-432.100.

Takegawa, Tetuo, to Nissan Motor Company, Limited. Mounting of outside rear view mirror on motor vehicle body. 4,253,633, Cl. 248-475.00B.

Takeguchi, Milton M.: *See*—
McDonald, Hugh C.; Odstrchel, Gerald; and Takeguchi, Milton M., 4,254,218, Cl. 435-7.000.

Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, to Nippon Kinzoku Co., Ltd.; and NSK Warner Kabushiki Kaisha. Winding spring for seat belt winding apparatus. 4,253,620, Cl. 242-107.000.

Takemoto, Shiro G.; and Sasaki, Yukihiko, to Avery International Corporation. Method of making matrix free thin labels. 4,253,899, Cl. 156-277.000.

Takeuchi, Yuzo: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.

Takizawa, Masaaki; and Matsubara, Noboru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable valve event engine. 4,253,434, Cl. 123-90.150.

Takizawa, Tatsuji; and Noda, Nobutaka, to Kabushiki-Kaisha KIP. Cleaning devices for use in electrophotographic apparatus. 4,253,761, Cl. 355-15.000.

Takizawa, Tetsuya, to Viva Co., Ltd. Automatic volume adjusting apparatus. 4,254,303, Cl. 179-1.0VL.

Tamai, Yasuo: *See*—
Aonuma, Masashi; and Tamai, Yasuo, 4,253,886, Cl. 148-105.000.

Tamura, Masaki; Shimizu, Mizuho; and Tago, Minoru, to CPC International Inc. Novel neutral glucoamylase and method for its production. 4,254,225, Cl. 435-96.000.

Tanaka, Shigeru: *See*—
Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, 4,254,274, Cl. 560-51.000.

Tanaka, Susumu: *See*—
Oka, Tateki; and Tanaka, Susumu, 4,254,203, Cl. 430-120.000.

Tanaka, Yoko: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida, Jun-ichi, 4,254,045, Cl. 260-397.200.

Taramasso, Marco: *See*—
Manara, Giovanni; Fattore, Vittorio; Taramasso, Marco; and Notari, Bruno, 4,254,296, Cl. 585-640.000.

Tasaka, Makoto. Bed furniture assembly. 4,253,204, Cl. 5-2.00R.

Tatsuta, Sumitaka; Hirose, Masuhiko; and Amari, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic material. 4,254,208, Cl. 430-215.000.

TAU Systems: *See*—
Adams, Paul C., 4,253,852, Cl. 55-126.000.

Tawara, Kanzi; Hamazato, Kazuo; Takahashi, Tatsuro; and Egawa, Tetsuaki, to Nippon Telegraph and Telephone Public Corporation. Time division telephone switching systems. 4,254,498, Cl. 370-63.000.

Taylor, Stanley E.: *See*—
Corderoy, Clive J.; and Taylor, Stanley E., 4,253,619, Cl. 242-86.50R.

Taylor, William L., to General Electric Company. Ceramic arc tube mounting. 4,254,355, Cl. 313-25.000.

TDK Electronics Company, Limited: *See*—
Yodogawa, Masatada; Morisawa, Matsuo; Yamamoto, Takashi; and Okutani, Katsunobu, 4,254,070, Cl. 264-61.000.

Technicon Instruments Corporation: *See*—
Limet, Joseph; Cambiaso, Cesar L.; Moussebois, Claude H.; and Masson, Pierre L., 4,253,844, Cl. 23-230.00B.
Smythe, William J.; Isreeli, Jack; and Pelavin, Milton H., 4,253,846, Cl. 23-230.00R.

Technitrol, Inc.: *See*—
McInerny, George P.; and Parker, Aaron F., 4,253,651, Cl. 270-58.000.

Tektronix, Inc.: *See*—
Haven, Duane A., 4,254,360, Cl. 313-395.000.

Temco Products, Inc.: *See*—
Thomas, Morton I., 4,253,203, Cl. 4-559.000.

Terada, Atsusuke; Tanaka, Shigeru; and Misaka, Eiichi, to Sankyo Company Limited. Cycloalkylidenemethylphenylacetic acid derivatives and process for the preparation thereof. 4,254,274, Cl. 560-51.000.

Terada, Masaaki, to Olympus Optical Co., Ltd. Endoscope connector. 4,253,448, Cl. 128-4.000.

Teramachi, Hiroshi. Four-way loaded type linear bearing. 4,253,709, Cl. 308-6.00C.

Teramoto, Tougo: *See*—
Sekida, Minoru; Fujii, Akira; Kobori, Toshio; and Teramoto, Tougo, 4,253,755, Cl. 354-242.000.

Terry, Angel F.: *See*—
Gokey, Phillip E.; Hurlbut, Donovan W.; Sederholm, Emma L.; and Terry, Angel F., 4,254,329, Cl. 235-379.000.

Teva Pharmaceutical Industries Ltd.: *See*—
Weiner, Ben-Zion; Suchi, Raul; Sterling, Jeffrey; and Yellin, Haim, 4,254,128, Cl. 424-267.000.

Texaco Development Corp.: *See*—
Dominguez, Richard J. G.; and Rice, Doris M., 4,254,069, Cl. 264-51.000.

Texaco Inc.: *See*—
Gunn, Kenneth M., 4,253,503, Cl. 141-59.000.
Hammond, Kenneth G.; and Chafetz, Harry, 4,253,980, Cl. 252-34.000.

Texas A & M University System: *See*—
Durso, Donald F., 4,254,258, Cl. 536-98.000.

Texas Instruments Incorporated: *See*—
Johnson, Dudley B., 4,254,309, Cl. 200-5.00A.
Weber, Richard M.; and Bedenbender, John W., 4,253,538, Cl. 181-119.000.

Textron, Inc.: *See*—
Sheldon, John D., 4,253,238, Cl. 30-276.000.

Tezuka, Shichigoro: *See*—
Ogawa, Koichi; Tezuka, Shichigoro; Maruyama, Takashi; and Kiyokawa, Kazuo, 4,254,148, Cl. 426-3.000.

Thermco Products Corporation: *See*—
Valentijn, Johan A., 4,253,417, Cl. 118-733.000.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile apparatus for the continuous replacement of ties. 4,253,398, Cl. 104-2.000.

Thiemer, Klaus: *See*—
Kleemann, Axel; Nubert, Ingomar; Stroman, Fritz; and Thiemer, Klaus, 4,254,269, Cl. 549-59.000.

Thilo, Peer: *See*—
Moser, Otto W.; and Thilo, Peer, 4,254,411, Cl. 340-517.000.

Thomann, Helmut; and Grabmaier, Christa, to Siemens Aktiengesellschaft. Electrophotographic element with bismuth oxide compound. 4,254,200, Cl. 430-84.000.

Thomas & Betts Corporation: *See*—
Logan, Maurus C.; Cole, John M.; and Garner, Peter, 4,253,730, Cl. 350-96.210.

Thomas, Lowell S.; and Petrella, Ronald V., to Dow Chemical Company, The. Polycarbonate containing an aromatic sulfonamide as an ignition depressant. 4,254,015, Cl. 260-45.90R.

Thomas, Lowell S.: *See*—
McEwen, Gerald K.; and Thomas, Lowell S., 4,254,014, Cl. 260-45.7PH.
Thomas, Morton I., to Temco Products, Inc. Folding transfer bench. 4,253,203, Cl. 4-559.000.
Thomas, Richard E.: *See*—
Haas, George A.; Thomas, Richard E.; and Greene, Richard F., 4,254,357, Cl. 313-268.000.
Thompson, Hugh B.: *See*—
Washburn, William J.; LaFever, Clifford E.; and Thompson, Hugh B., 4,253,376, Cl. 89-33.0BB.
Thompson, John R. Non-destructive vibratory cleaning system for reverse osmosis and ultra filtration membranes. 4,253,962, Cl. 210-414.000.
Thompson-Russell, Kathryn C., to U.S. Philips Corporation. Electric lamp. 4,254,300, Cl. 174-50.640.
Thomsen, Erik J.; and Brennan, Patrick W., to Sun-Flex Company. Anti-Glare device for a computer terminal display tube. 4,253,737, Cl. 350-276.00R.
Thrasher, Donald D. Continuous flow classification and specific gravity separation apparatus. 4,253,943, Cl. 209-44.000.
Tiffany, Charles E. Trunk mounted cargo carrier. 4,253,595, Cl. 224-328.000.
Tiktin, Gary. Weighted exercise glove. 4,253,660, Cl. 272-67.000.
Timar, Magdalena, to Institul de Cercetari Chimicofarmaceutice. Hepatoprotector Factor (HF) and method of treatment. 4,254,103, Cl. 424-106.000.
Timex Corporation: *See*—
Billet, Alain, 4,254,493, Cl. 368-185.000.
Timmer, Dana W. Garbage disposal drain protector. 4,253,616, Cl. 241-46.00B.
Timmerman, Robert W. Waste heat utilization system. 4,253,517, Cl. 165-97.000.
Tipon, Donald G., to NCR Corporation. Data processing system having optically linked subsystems, including an optical keyboard. 4,254,407, Cl. 340-365.00P.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,253,984, Cl. 252-429.00B.
Tobias, Luther; and Bories, David G. Powered joint forming device for concrete or the like. 4,253,816, Cl. 425-385.000.
Todd, Michael A.: *See*—
Bennett, Brian S.; Gray, Bruce A. A.; and Todd, Michael A., 4,253,232, Cl. 29-623.100.
Togneri, Mauro G., to Powell Industries, Inc. Controller deviation indicator. 4,254,412, Cl. 340-525.000.
Tohkairin, Akira: *See*—
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.
Tokuhiro, Takao: *See*—
Konno, Mitoshi; Itoh, Hiroyuki; Tokuhiro, Takao; Ohta, Katsumi; and Hayashi, Masaki, 4,254,056, Cl. 564-387.000.
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focus detecting device. 4,253,751, Cl. 354-25.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Sagoi, Masayuki; Itoh, Masayuki; Miyauchi, Masami; and Watanabe, Osamu, 4,253,873, Cl. 75-175.500.
Yoshikane, Akishige, 4,254,499, Cl. 370-85.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Iinuma, Kazuhiro; Kidokoro, Takeshi; and Takamizawa, Kinya, 4,253,338, Cl. 73-626.000.
Tolbert, William R.; and Feder, Joseph, to Monsanto Company. Quick connect coupler with air shield. 4,253,684, Cl. 285-13.000.
Toltec Industries Inc.: *See*—
Chenault, David O, 4,253,895, Cl. 156-163.000.
Tomaszek, Paul A.: *See*—
Mouyard, Arthur A.; Hamby, Michael V.; and Tomaszek, Paul A., 4,254,453, Cl. 362-240.000.
Tomblin, Glen E.: *See*—
Maza, Dale T.; Tomblin, Glen E.; and Ruckman, Harold, 4,253,260, Cl. 40-610.000.
Tomita, Yoshifumi: *See*—
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,254,197, Cl. 430-28.000.
Tondello, Giuseppe; and Malvezzi, Andrea M., to C.I.S.E. Centro Informazioni Studi e Esperienze S.p.A. Spectrograph-monochromator of grazing incidence type. 4,254,335, Cl. 250-277.00R.
Toro Company, The: *See*—
Hunter, Edwin J., 4,253,608, Cl. 239-206.000.
Toshiba Corporation: *See*—
Morita, Hiroshi, 4,253,742, Cl. 350-357.000.
Toukan, Sameeh S.; and Hauptschein, Murray, to Pennwalt Corporation. Fluorinated heterocyclic sulfides. 4,254,266, Cl. 548-173.000.
Towns, Edward J.: *See*—
Lester, William M.; Brown, Edward M.; and Towns, Edward J., 4,253,588, Cl. 222-153.000.
Townsend Engineering Company: *See*—
Townsend, Ray T., 4,254,151, Cl. 426-231.000.
Townsend, Ray T., to Townsend Engineering Company. Method for injecting fluids into meat products. 4,254,151, Cl. 426-231.000.
Toyo Ink Manufacturing Co., Ltd.: *See*—
Goto, Kiyoshi, 4,254,234, Cl. 525-153.000.
Toyo Jozo company, Ltd.: *See*—
Otani, Masaru; Saito, Tetsu; Satoi, Shuzo; Mizoguchi, Junzo; and Muto, Naoki, 4,254,256, Cl. 536-18.000.
Toyo Kogyo Co., Ltd.: *See*—
Haramoto, Tsutomu, 4,253,437, Cl. 123-325.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Doi, Koichi; Mori, Fumio; Ichinose, Isao; Ogimoto, Tetsuomi; and Kitakawa, Katsuhiko, 4,253,580, Cl. 215-228.000.
Toyooka, Yasuo; Ohnishi, Kunio; Murase, Haruo; and Ueno, Tadaomi, to Mitsubishi Rayon Co., Ltd. Continuous production of decorated synthetic resin sheet. 4,254,074, Cl. 264-132.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Nishina, Shuho, 4,253,622, Cl. 242-107.40A.
Nohira, Hidetaka; Konomi, Toshiaki; and Matsui, Hideaki, 4,253,432, Cl. 123-52.00M.
Shibatani, Juichi; Nakamura, Kenichi; Izuhara, Wataru; and Obu, Yuichiro, 4,253,552, Cl. 188-218.00A.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,253,440, Cl. 123-442.000.
Takizawa, Masaaki; and Matsubara, Noboru, 4,253,434, Cl. 123-90.150.
Traber, Walter: *See*—
Kristinsson, Haukur; and Traber, Walter, 4,254,133, Cl. 424-273.00R.
Traenckner, Hans-Joachim; Rosenkranz, Hans J.; and Rudolph, Hans, to Pfizer Inc. Air-drying coating compositions. 4,253,918, Cl. 204-159.220.
Transac—Compagnie pour le Developpement des Transactions Automatiques: *See*—
Buys, Henri, 4,253,654, Cl. 271-155.000.
Treiber, Robert, to International Telephone and Telegraph Corporation. Current limited subscriber line feed circuit. 4,254,305, Cl. 179-16.00F.
Tremont, Samuel J.; and Williamson, Alex N., to Monsanto Company. Dehydrocoupling of toluene. 4,254,293, Cl. 585-428.000.
Triebwasser, Keith C., to Proctor & Gamble Company, The. Control of pyrophosphate microorganisms with organophosphonates. 4,254,114, Cl. 424-204.000.
Trihus, Axicor T. Cable tester. 4,254,374, Cl. 324-54.000.
Trio Kabushiki Kaisha: *See*—
Yamada, Tsuneo; and Miyamoto, Yukihiko, 4,254,346, Cl. 307-273.000.
Trofimov, Vladimir A.: *See*—
Miroshnichenko, Vitaly T.; Popov, Alexandr D.; Solomin, Vladimir A.; and Trofimov, Vladimir A., 4,254,350, Cl. 310-13.000.
Tronich, Wolfgang: *See*—
Arndt, Otto; and Tronich, Wolfgang, 4,254,054, Cl. 260-510.000.
Tropp, Joel S.: *See*—
De Socio, Paul; Kaporsvsky, Morris; and Tropp, Joel S., 4,254,156, Cl. 426-565.000.
Troxell, John N., Jr., to Cameron Iron Works, Inc. Blowout preventer. 4,253,638, Cl. 251-1.00A.
True-Line Mold & Engineering Corporation: *See*—
Stewart, David S., 4,253,717, Cl. 339-14.00T.
Truskalo, Walter, to RCA Corporation. Regulated deflection circuit. 4,254,366, Cl. 315-400.000.
Truszkowski, Jacek: *See*—
Markowski, Kazimierz; Truszkowski, Jacek; Niedzielski, Wojciech; and Slomkowski, Jaroslaw, 4,254,484, Cl. 367-115.000.
Truth Incorporated: *See*—
Peterson, Jeffory A.; and Nelson, Eric W., 4,253,276, Cl. 49-249.000.
TRW Inc.: *See*—
Piotrowski, Wieslaw S.; and Raue, Jorg E., 4,254,384, Cl. 333-1.100.
Tsuchiya, Hiroyuki: *See*—
Abe, Kohki; Tsuchiya, Hiroyuki; and Mizuno, Masayoshi, 4,254,209, Cl. 430-272.000.
Tsuchiya, Yasuyuki; Ichikawa, Akio; and Yamasoe, Kastuyoshi, to Nippon Paint Co., Ltd. Process for electrodepositing cationic compositions. 4,253,930, Cl. 204-181.00C.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, to Olympus Optical Co., Ltd. Electrophotographic apparatus for printing multiple copies of an image on a photosensitive member. 4,253,760, Cl. 355-14.0CU.
Tsuiki, deceased Harunobu: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.
Tsuiki, Manami, legal representive: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.
Tsuiki, Noriko, a legal representative: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.
Tsuiki, Tomohiro, legal representive: *See*—
Sawai, Yuji; Ushiyama, Hisayuki; Tsuiki, deceased Harunobu; Tsuiki, Noriko, a legal representative; Tsuiki, Tomohiro, legal representive; Tsuiki, Manami, legal representive; Fujii, Tadashi; Akutsu, Eiichi; and Ikeda, Itsuo, 4,254,201, Cl. 430-111.000.

Tsuji, Okitsugu: *See*—
Shimizu, Isoo; Tsuji, Okitsugu; Matsuzaka, Eiichi; and Sato, Atsushi, 4,254,292, Cl. 585-320.000.
Tsuji, Takaakira: *See*—
Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, 4,254,182, Cl. 428-372.000.
Tsukagoshi, Tsunehiro; Suzuki, Shin-ichi; and Ogino, Hitomi, to Pioneer Electronic Corporation. Vibrating member for acoustic transducer and method for manufacturing the same. 4,254,184, Cl. 428-408.000.
Tsutsumi, Shunichi: *See*—
Kimura, Hiroshi; Matsutani, Kazuhito; and Tsutsumi, Shunichi, 4,254,060, Cl. 564-479.000.
Tukherm, Tiit A.: *See*—
Lippmaa, Endel T.; Alla, Madis A.; Salumyae, Ants A.; and Tukherm, Tiit A., 4,254,373, Cl. 324-321.000.
Tulleners, Harry W., to Midland-Ross Corporation. Power factor compensating electroluminescent lamp DC/AC inverter. 4,254,362, Cl. 315-219.000.
Tully, Louis E.: *See*—
McConnell, David P.; and Tully, Louis E., 4,253,380, Cl. 91-503.000.
Tunemoto, Daiei: *See*—
Kondo, Kiyoshi; Takashima, Toshiyuki; and Tunemoto, Daiei, 4,254,282, Cl. 562-506.000.
Tung, William C. T., to Goodyear Tire & Rubber Company, The. Random elastomeric copolyesters. 4,254,001, Cl. 260-22.00D.
Turner, James A., Jr., to National Welders Supply Co., Inc. Carrier for gas cylinders. 4,253,716, Cl. 312-100.000.
Turpin, Edward T., to SCM Corporation. Thermosetting powder paints. 4,254,235, Cl. 525-162.000.
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Lunden, Sidney L.; and Ulrich, Robert E., 4,253,787, Cl. 414-42.000.
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Ono, Shohachi; Umeda, Noriaki; Kai, Hisayoshi; and Okada, Kenichi, 4,254,028, Cl. 260-23.00S.
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Perrault, Robert D., 4,253,245, Cl. 34-48.000.
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Kun, Leslie C.; and Ragi, Elias G., 4,253,519, Cl. 165-110.000.
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Raynes, Edward P.; and Smith, Robert A., 4,253,740, Cl. 350-350.00R.
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Kossoff, Irwin I., 4,253,601, Cl. 229-22.000.
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Holland, Eddie L.; and White, Charles A., 4,253,422, Cl. 119-17.000.
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Bailey, August V.; and Sumrell, Gene, 4,254,022, Cl. 260-112.00R.
Harris, James A.; and Arthur, Jett C., Jr., 4,253,841, Cl. 8-116.00R.
Maher, George G., 4,253,970, Cl. 210-731.000.
Mangialardi, Gino J., Jr., 4,253,215, Cl. 19-66.0CC.
Rowland, Stanley P.; Blouin, Florine A.; and Shih, Frederick F., 4,254,005, Cl. 260-29.60H.
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Field, Werner, 4,253,375, Cl. 86-1.00R.
Mon, George, 4,253,495, Cl. 137-833.000.
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Haas, George A.; Thomas, Richard E.; and Greene, Richard F., 4,254,357, Cl. 313-268.000.
Kramer, Irvin R., 4,253,408, Cl. 110-346.000.
Marek, Albert J., 4,253,628, Cl. 244-151.00A.
Matsuo, Jon T., 4,253,627, Cl. 244-145.000.
Skaalen, Clifford I.; and Rausch, Arthur B., 4,253,547, Cl. 182-115.000.
Speiser, Jeffrey M., 4,254,417, Cl. 343-100.0SA.
Street, Thomas T.; and Alexander, John I., 4,254,414, Cl. 340-627.000.
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Bellugue, Jacques, 4,253,880, Cl. 136-259.000.
Derks, Petrus J. A. M.; Van Dommelen, Joannes H. J.; and Dieleman, Jan, 4,254,359, Cl. 313-386.000.
Dijkmans, Eise C.; and Schoofs, Franciscus A. C. M., 4,254,442, Cl. 361-56.000.
Lohstroh, Jan, 4,254,427, Cl. 357-13.000.
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Carlson, Russell L., 4,253,739, Cl. 350-310.000.
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Unitika Ltd.: *See*—
Kyo, Kayomon; Asai, Yasuhiko; and Kohyama, Haruo, 4,254,242, Cl. 525-425.000.
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Janisiewicz, Stanley; and Holmes, Robert H., 4,253,585, Cl. 221-242.000.
Universal Packaging Machinery Sales Corp.: *See*—
Guercio, Salvatore P., 4,253,502, Cl. 141-47.000.
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Dalal, Vikram L., 4,253,882, Cl. 136-249.000.
University of Miami: *See*—
Miale, John B.; Miale, August, Jr.; and Porter, Raymond P., 4,253,877, Cl. 106-18.350.
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Bliss, Robert L., 4,253,284, Cl. 52-109.000.
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Anderson, David J.; and Loughman, Barbara E., 4,254,142, Cl. 424-300.000.
Sih, John C., 4,254,040, Cl. 260-346.220.
Sih, John C., 4,254,041, Cl. 260-346.220.
Sih, John C., 4,254,042, Cl. 260-346.220.
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Ushida, Susumu, to Burroughs Corporation. Modified Foster-Seeley frequency discriminator. 4,254,378, Cl. 329-137.000.

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Baldwin, Maynard M.; Wyant, Robert E.; and Vaaler, Luther E., 4,253,921, Cl. 204-72.000.

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Valcho, Joseph J.; and Karll, Robert E., to Standard Oil Company (Indiana). Oil recovery and mobility control in surfactant systems using the reaction product of an alkenyl succinic anhydride and a tertiary amine. 4,253,974, Cl. 252-8.55D.

Valentijn, Johan A., to Thermco Products Corporation. Closure for thermal reactor. 4,253,417, Cl. 118-733.000.

Valeron Corporation, The: *See*—
Juengel, Richard O.; and Cook, Kenneth J., 4,254,472, Cl. 364-900.000.

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Holt, John P.; and Cash, Theodore P., 4,253,590, Cl. 222-590.000.

Vama Vertrieb von Anlagen und Maschinen GmbH & Co. KG: *See*—
Muller, Bernd, 4,253,446, Cl. 126-435.000.

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Blytas, George C.; Maas, Rudolf J.; van Aken, Andreas B.; and van Schalkwijk, Christiaan, 4,253,928, Cl. 204-180.00P.

VanBuren, Martin F.: *See*—
Friends, Gary D.; and VanBuren, Martin F., 4,254,248, Cl. 526-279.000.

Vance, Ian A. W., to International Standard Electric Corporation. Radio receiver for tone modulated signals. 4,254,503, Cl. 375-91.000.

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Vandenberg, John D.; and Vandenberg, Leonard B., 4,253,562, Cl. 206-45.330.

Vandenberk, Jan; Kennis, Ludo E. J.; Van Heertum, Albert H. M. Th.; and Van der Aa, Marcel J. M. C., to Janssen Pharmaceutica, N.V. 1,3-Dihydro-1-[(1-piperidinyl)alkyl]-2H-benzimidazol-2-one derivatives. 4,254,127, Cl. 424-263.000.

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Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., 4,253,936, Cl. 204-296.000.

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Myers, Douglas; and Vandenkieboom, John, 4,253,559, Cl. 198-345.000.

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Vanderjagt, John A. Double action hand pump structure. 4,253,804, Cl. 417-534.000.

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Derks, Petrus J. A. M.; Van Dommelen, Joannes H. J.; and Dieleman, Jan, 4,254,359, Cl. 313-386.000.

Van Drie, Gerhardt. Unloading-type conveyor system. 4,253,791, Cl. 414-528.000.

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VanRyck, Theodore H. Butterfly valve and perimeter seal. 4,253,641, Cl. 251-306.000.

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Blytas, George C.; Maas, Rudolf J.; van Aken, Andreas B.; and van Schalkwijk, Christiaan, 4,253,928, Cl. 204-180.00P.

Van Stappen, Albert L., to Du Pont de Nemours, E. I., and Company. Combined silver halide tonable photopolymer element to increase density. 4,254,210, Cl. 430-285.000.

Van Winkle, William. Rack for tennis and similar rackets. 4,253,575, Cl. 211-13.000.

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Schleiter, Daniel P., Sr., 4,253,489, Cl. 137-527.000.

Varco International, Inc.: *See*—
Krasnov, Igor, 4,253,219, Cl. 24-263.00D.

Varga, Joseph, to Ceeco Machinery Manufacturing Limited. High speed cage fly-off strander. 4,253,298, Cl. 57-13.000.

Varga, Richard S.: *See*—
Rinker, William R.; and Varga, Richard S., 4,253,898, Cl. 156-272.000.

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Bernstein, Philip; Coffey, James P.; and Varker, Alan E., 4,253,927, Cl. 204-159.170.

Varlamov, Gennady D.: *See*—
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Vasile, Carmine F., to Rockwell International Corporation. Ultrasonic nondestructive testing method. 4,253,337, Cl. 73-599.000.

Vatsky, Joel. Air flow regulator. 4,253,403, Cl. 110-104.00B.

Veber, Daniel F.; and Freidinger, Roger M., to Merck & Co., Inc. Long-lasting agonists of enkephalin. 4,254,107, Cl. 424-177.000.

Vela, Octavio A.: *See*—
Smither, Miles A.; and Vela, Octavio A., 4,254,481, Cl. 367-82.000.

Venkatesan, Thirumalai N. C., to Bell Telephone Laboratories, Incorporated. Multimode electrically switched optical port. 4,253,728, Cl. 350-96.150.

Vereinigte Flugtechnische Werke-Fokker GmbH: *See*—
Reinhard, Gerhard, 4,254,423, Cl. 343-883.000.

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Sulzbacher, Horst; Stift, Kurt; and Saiger, Gunther, 4,254,167, Cl. 427-216.000.

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Leysen, Roger F. R.; Vermeiren, Philippe; Baetsle, Leon H. J. M.; Spaepen, Gustaaf J. F.; and Vandenborre, Jan-Baptist H., 4,253,936, Cl. 204-296.000.

Veslocki, Timothy A.: *See*—
Marshall, John M.; Veslocki, Timothy A.; and Sulicz, James J., 4,253,644, Cl. 266-44.000.

Vezzani, Luciano, to Officine Vezzani S.p.A. Method and machine for compressing and cutting random loaded scrap metal. 4,253,388, Cl. 100-39.000.

VFE Corp.: *See*—
Cottrell, Henry L.; and Faith, Wesley A., 4,253,405, Cl. 110-222.000.

Viaud, Nicole: *See*—
Dalibard, Gerard; and Viaud, Nicole, 4,253,871, Cl. 75-166.00B.

Vickers Limited: *See*—
Gates, Allen P.; and Saunderson, Allan, 4,254,244, Cl. 525-502.000.

Vidovic, Nikola, to Atronic Corporation. Ultrasonic intrusion alarm system. 4,254,483, Cl. 367-94.000.

Virkus, Mark K., to Potter Electric Signal Co. Pseudo-random pulse line security monitoring system. 4,254,410, Cl. 340-512.000.

Visscher, Ronald B.: *See*—
Strickland, Danny L.; and Visscher, Ronald B., 4,253,461, Cl. 128-287.000.

Vitukevich, Ronald: *See*—
Matson, Wayne R.; and Vitukevich, Ronald, 4,253,847, Cl. 23-230.00R.

Viva Co., Ltd.: *See*—
Takizawa, Tetsuya, 4,254,303, Cl. 179-1.0VL.

Vogel, Ralph A.: *See*—
O'Connor, James A.; Kiefer, Kenneth P.; and Vogel, Ralph A., 4,253,569, Cl. 206-391.000.

Vogt, Robert L., to General Electric Company. Fuel injection staged sectoral combustor for burning low-BTU fuel gas. 4,253,301, Cl. 60-39.46P.

von Bonin, Wulf: *See*—
Kleimann, Helmut; von Bonin, Wulf; and Schneider, Heinz-Georg, 4,254,228, Cl. 521-128.000.

Voto, Randy L.: *See*—
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.

Vrisakis, Georges; and Chastel, Jacques, to Rhone-Poulenc Industries. Granulation of sodium metasilicate. 4,253,849, Cl. 23-313.0AS.

Vrtaric, John. Hair singer and hair dryer. 4,254,324, Cl. 219-361.000.

Vulcano, Vincent N.; and Friedman, Maurice W. Automatic bagging machine. 4,253,290, Cl. 53-256.000.

Vydrin, Vladimir N.; Dukmasov, Vladimir G.; Davlyatshik, Garifulla; and Kuznetsov, Sergei L. Method of controlling the thickness of strip stock being rolled. 4,253,322, Cl. 72-245.000.

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Fulmer, Glenn E., 4,254,177, Cl. 428-256.000.

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Wada, Shozo: *See*—
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,253,984, Cl. 252-429.00B.

Waffner, William D., to Moore Business Forms, Inc. Loose loop feed control apparatus. 4,253,597, Cl. 226-40.000.

Wagner, Kuno: *See*—
Muller, Hanns P.; Oberkirch, Wolfgang; Wagner, Kuno; and Quiring, Bernd, 4,254,176, Cl. 428-220.000.

Wakahara, Yasushi: *See*—
Yamazaki, Yasuhiro; Wakahara, Yasushi; and Matsuo, Kazunori, 4,254,438, Cl. 358-261.000.

Wakamatsu, Kazuki: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,254,237, Cl. 525-323.000.

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Fukuzuka, Toshio; Urai, Masaaki; and Wakayama, Kenji, 4,254,158, Cl. 427-8.000.

Walker, Gordon M.: *See*—
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Walker, Jack M.; and Tweed, Donald G., to Raychem Corporation. Electrical heater apparatus. 4,254,326, Cl. 219-536.000.

Walker, James L. Hydraulic catworks system. 4,253,354, Cl. 81-57.340.

Wall, Robert G.; Suzuki, Shigeto; and Wilkes, John B., to Chevron Research Company. Process for the production of alkene-1,5-diols. 4,254,289, Cl. 568-857.000.

Walsh, David A.; and Shamblee, Dwight A., to A. H. Robins Company, Inc. 3-Amino-4-hydroxypyrrolidines. 4,254,135, Cl. 424-274.000.

Walsh, David A., to A. H. Robins Company, Inc. 3-Benzoyl-2-nitrophenylacetic acids, metal salts, amides and esters. 4,254,146, Cl. 424-309.000.

Walsh, Michael M.: *See—*
Worthen, Roger P.; and Walsh, Michael M., 4,253,491, Cl. 137-599.000.

Walsh, Peter, to Duro-Test Corporation. Electrodeless coupled discharge lamp having reduced spurious electromagnetic radiation. 4,254,363, Cl. 315-248.000.

Walshe, James C. Electronic stethoscope. 4,254,302, Cl. 179-1.0ST.

Walter, Hermann; and Frohlich, Georg, to Carl Freudenberg, Firma. Pick-up device for round products. 4,253,694, Cl. 294-93.000.

Walters, Gene R.: *See—*
Glanville, James O.; and Walters, Gene R., 4,254,166, Cl. 427-212.000.

Wambach, Raimund; Hartung, Sigurd; Reiss, Gerhard; and Puppe, Lothar, to Bayer Aktiengesellschaft. Separation process. 4,254,062, Cl. 570-211.000.

Wanders, Marlene, heir: *See—*
Beckers, Hans; Jung, Paul-Werner; Bovians, Herbert; Heyer, Hans, deceased; and Wanders, Marlene, heir, 4,253,815, Cl. 425-235.000.

Wang, Chih-Chang, to Kennecott Copper Corporation. Method for the production of copper-boron carbide composite. 4,253,917, Cl. 204-16.000.

Ward, Ian M.: *See—*
Capaccio, Giancarlo; Smith, Francis S.; and Ward, Ian M., 4,254,072, Cl. 264-210.300.

Ware, Ormond H., to Nemethy, Mike Z., a part interest. Post and sleeve arrangement. 4,253,835, Cl. 433-220.000.

Wareham, Richard R.: *See—*
Norris, Philip R.; and Wareham, Richard R., 4,253,748, Cl. 352-82.000.

Warncke, Ernst, to Dragerwerk Aktiengesellschaft. Respirator package for carrying on a person. 4,253,454, Cl. 128-202.260.

Wartelle, Claude, to Centre Technique des Industries Mechaniques. Hydraulic machine of the multicylinder drum type. 4,253,381, Cl. 91-506.000.

Washburn, William J.; LaFever, Clifford E.; and Thompson, Hugh B., to Ford Motor Company. Termination accumulator. 4,253,376, Cl. 89-33.0BB.

Watanabe, Isao: *See—*
Komurasaki, Satoshi; and Watanabe, Isao, 4,253,734, Cl. 350-386.000.

Watanabe, Naomitsu: *See—*
Miura, Kiyoshi; Watanabe, Naomitsu; and Tomita, Yoshifumi, 4,254,197, Cl. 430-28.000.

Watanabe, Osamu: *See—*
Sagoi, Masayuki; Itoh, Masayuki; Miyauchi, Masami; and Watanabe, Osamu, 4,253,873, Cl. 75-175.500.

Watson Energy Systems, Inc.: *See—*
Price, Harold A., 4,253,940, Cl. 209-3.000.

Watson, William Q.: *See—*
Blomeyer, Earle B.; Watson, William Q.; and Richardson, Charles T., Jr., 4,254,308, Cl. 179-148.00R.

Watterman, Peter C. Method and apparatus for piano tuning and tempering. 4,253,374, Cl. 84-455.000.

Weatherchem Corporation: *See—*
Otterson, Lewis L., 4,253,587, Cl. 222-151.000.

Weaver, Robert L.; and Jamieson, Alastair M., to Molson Companies Limited, The. Light protective bottle glass. 4,253,878, Cl. 106-52.000.

Webb, Charles P. N.: *See—*
MacLeod, Norman A.; and Webb, Charles P. N., 4,253,971, Cl. 210-759.000.

Weber, Richard M.; and Bedenbender, John W., to Texas Instruments Incorporated. Broadband seismic energy source. 4,253,538, Cl. 181-119.000.

Webster, Frank G.; and Regan, Michael T., to Eastman Kodak Company. Electrophotosensitive materials for migration imaging processes. 4,254,198, Cl. 430-37.000.

Weickhardt, Ludwig: *See—*
Franken, Walter; Nussbaumer, Dieter; Perl, Horst; and Weickhardt, Ludwig, 4,253,963, Cl. 210-500.200.

Weigel, Horst: *See—*
Kleemann, Axel; Weigel, Horst; and Scherberich, Paul, 4,254,035, Cl. 260-340.50R.

Weigert, Frank J., to Du Pont de Nemours, E. I., and Company. Preparation of monomethylamine. 4,254,061, Cl. 564-479.000.

Weigl, Erwin; and Kubelka, Axel, to Polyair Produkt Design Gesellschaft m.b.H. Shoe fastener. 4,253,250, Cl. 36-50.000.

Weikert, William C.: *See—*
Stinton, Frederick M.; and Weikert, William C., 4,253,817, Cl. 425-447.000.

Weiler, Wolfgang, to Motoren-und Turbinen-Union Munchen GmbH. Apparatus for operating shut-off members in gas turbine engines, particularly in turbojet engines. 4,253,797, Cl. 415-162.000.

Weinberg, Kurt; and Johnson, Gordon C., to Union Carbide Corporation. Process for producing polyoxyalkylene glycol modified polyesters. 4,254,241, Cl. 525-408.000.

Weiner, Ben-Zion; Suchi, Raul; Sterling, Jeffrey; and Yellin, Haim, to Teva Pharmaceutical Industries Ltd. 2-Adamantyl hydrazines and biocidal compositions thereof. 4,254,128, Cl. 424-267.000.

Weinert, Freidrich. Heat exchanging system. 4,253,427, Cl. 122-26.000.

Weinstock, Joseph: *See—*
Brush, Charles K.; and Weinstock, Joseph, 4,254,140, Cl. 424-285.000.

Welch Allyn, Inc.: *See—*
Moore, William C.; Newman, Richard W.; and Danna, Dominick, 4,253,447, Cl. 128-6.000.

Welch, Cletus N., to PPG Industries, Inc. Cathode electrocatalysts for solid polymer electrolyte chlor-alkali cells. 4,253,922, Cl. 204-98.000.

Wen, Chin-Yung: *See—*
Fan, Liang-Tseng; and Wen, Chin-Yung, 4,253,947, Cl. 210-610.000.

Wen-Don Corporation: *See—*
Glanville, James O.; and Walters, Gene R., 4,254,166, Cl. 427-212.000.

Wendler, Heinz: *See—*
Kuhnle, Willi; and Wendler, Heinz, 4,253,346, Cl. 74-861.000.

Wenzlaff, Karl H. Self-contained emergency electric signal light and audiblizer. 4,254,405, Cl. 340-321.000.

West, Roger K.: *See—*
Newman, Neil F.; Roper, Robert; and West, Roger K., 4,254,240, Cl. 525-356.000.

Western Electric Company, Inc.: *See—*
Cole, Michael A.; and Morgan, Walter W., 4,253,289, Cl. 53-53.000.
Du Bois, Loring E.; and Simpson, Lawrence D., 4,253,280, Cl. 51-283.00R.
Lynch, Brian, 4,253,583, Cl. 220-319.000.
Martyniak, Gerald J., 4,254,448, Cl. 361-409.000.
Parry, Peter D.; and Jerde, Leslie G., 4,253,907, Cl. 156-643.000.
Piazza, John R., 4,254,163, Cl. 427-96.000.

Westinghouse Electric Corp.: *See—*
Fidei, Frank P.; Saviski, Michael; and Jarabak, Andrew J., 4,254,352, Cl. 310-71.000.
Giardina, Angelo R., 4,253,516, Cl. 165-78.000.
Nanstiel, William F., Jr., 4,253,241, Cl. 33-178.00R.
Smith, James D. B.; and Kauffman, Robert N., 4,254,351, Cl. 310-45.000.
Yaroshuk, Nicholas; Sarkozi, Miklos; Miller, Robert C.; and Kennedy, Paul G., 4,253,768, Cl. 356-431.000.

Westvaco Corporation: *See—*
Chaudhuri, Partha S., 4,253,913, Cl. 162-198.000.

Wewer, Hans: *See—*
Dicoi, Ovidiu; and Wewer, Hans, 4,254,246, Cl. 526-68.000.

Wheatley, Carl F., Jr., to RCA Corporation. Balanced-to-single-ended signal converters. 4,254,381, Cl. 330-301.000.

Whelan, Paul L. Process and apparatus for moisture conditioning seed cotton and like materials. 4,253,243, Cl. 34-31.000.

Whirlpool Corporation: *See—*
Sisk, George W., Jr., 4,254,311, Cl. 200-61.070.

White, Calvin L.: *See—*
Liu, Chain-Tsuan; Inouye, Henry; Schaffhauser, Anthony C.; and White, Calvin L., 4,253,872, Cl. 75-172.00R.

White, Charles A.: *See—*
Holland, Eddie L.; and White, Charles A., 4,253,422, Cl. 119-17.000.

White, David L., to Kramor Industries Ltd. Paging and servicing system. 4,254,404, Cl. 340-311.000.

White, George A.: *See—*
Ross, Nicholas D.; White, George A.; and Allinson, William L., 4,254,153, Cl. 426-441.000.

White, Ira G., to Hunt Valve Co., Inc. Hydraulic pumps. 4,253,808, Cl. 418-126.000.

White, James A.; and Rice, Frank L., to General Electric Company. Lamp assembly for combination microwave oven and exhaust vent. 4,254,450, Cl. 362-92.000.

White, Philip D.: *See—*
Redwood, Martin; Stevens, Richard; White, Philip D.; and Mitchell, Richard F., 4,254,387, Cl. 333-194.000.

Whitely, Robert M., to NCR Corporation. Method and apparatus for offset error correction. 4,254,469, Cl. 364-571.000.

Whiting Oilfield Rental, Inc.: *See—*
Maples, John H., 4,253,687, Cl. 285-332.300.

Wick, Alexander E.: *See—*
Kompis, Ivan; and Wick, Alexander E., 4,254,286, Cl. 568-442.000.

Wicker, Thomas H., Jr.: *See—*
Gilkey, Russell; and Wicker, Thomas H., Jr., 4,254,254, Cl. 528-288.000.

Wiedmann, Siegfried K.: *See—*
Feth, George C.; and Wiedmann, Siegfried K., 4,254,428, Cl. 357-15.000.

Wieland, Erich G., to Koenig & Bauer Aktiengesellschaft. Sheet gripper. 4,253,396, Cl. 101-409.000.

Wienhofer, Ekkehard: *See—*
Coenen, Alfred; Kosswig, Kurt; and Wienhofer, Ekkehard, 4,254,092, Cl. 423-497.000.

Wilbert, Inc.: *See—*
Work, Gerald L., 4,253,220, Cl. 27-35.000.

Wilburn, Kenneth R.: *See—*
Graham, Joseph A., Jr.; and Hibbs, Clair R., 4,254,098, Cl. 424-14.000.

Wildt Mellor Bromley Limited: *See—*
Ecob, Osmond H.; and Johnson, Bertram, 4,253,316, Cl. 66-14.000.

Wiley, Bruce F., to Phillips Petroleum Company. Method and apparatus for measuring rock permeability at elevated pressures and temperature. 4,253,327, Cl. 73-38.000.

Wiley, Bruce F., to Phillips Petroleum Company. Sonic logging method for determining the need for sand consolidation treatment. 4,254,479, Cl. 367-35.000.

Wilhelm Fette GmbH, Firma: *See*—
Hinzpeter, Jurgen; Schmidt, Ingo; and Friedrichs, Konrad, 4,253,811, Cl. 425-149.000.

Wilhelm, Ralph V., Jr.: *See*—
Gold, Terry J.; Humphrey, Kurt D.; Penney, Keith A.; Smith, Robert J.; Voto, Randy L.; and Wilhelm, Ralph V., Jr., 4,253,931, Cl. 204-192.0SP.

Wilhoit, George D. Heat responsive fire extinguishing system. 4,253,527, Cl. 169-57.000.

Wilkens, Henry W.: *See*—
Sabatino, Daniel D.; and Wilkens, Henry W., 4,253,332, Cl. 73-224.000.

Wilkes, John B.: *See*—
Wall, Robert G.; Suzuki, Shigeto; and Wilkes, John B., 4,254,289, Cl. 568-857.000.

Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active amides. 4,254,106, Cl. 424-177.000.

Will, Gerhard; and Stroh, Walter, to Robert Bosch GmbH. Safety circuit for electronically controlled automatic vehicle transmission. 4,253,348, Cl. 74-866.000.

Willem, Arnold A.; Broekaert, Johan M.; and De Gueldre, Jean M., to AGFA-GEVAERT N.V. Method of recording X-ray images and imaging chamber suited therefor. 4,254,033, Cl. 250-315.200.

Williams, Galen, to Harvest Industries, Inc. Invertible feed bunk. 4,253,424, Cl. 119-61.000.

Williams, Kenneth L.: *See*—
Wolf, Peter; and Williams, Kenneth L., 4,253,496, Cl. 137-862.000.

Williams, Louis B., Jr., to Monsanto Company. Metered finish. 4,253,416, Cl. 118-401.000.

Williams, Ronald A., to Baxter Travenol Laboratories, Inc. Sterile connector adapted for multiple junctions. 4,253,500, Cl. 141-1.000.

Williams, Thomas R., to Bucyrus-Erie Company. Modular boom construction. 4,253,579, Cl. 52-655.000.

Williamson, Alex N.: *See*—
Tremont, Samuel J.; and Williamson, Alex N., 4,254,293, Cl. 585-428.000.

Williamson, Richard D.: *See*—
Philipps, Donald F.; and Williamson, Richard D., 4,253,796, Cl. 415-157.000.

Williamson, Robert R., to Better Agricultural Goals Corporation. Reinforced container for bulk materials. 4,253,507, Cl. 150-1.000.

Willis, Wilburn C., to Aluminum Company of America. Additive transfer unit with stabilized sealing means. 4,253,459, Cl. 128-272.300.

Willyoung, David M., to General Electric Company. Supplementary fired combined cycle power plants. 4,253,300, Cl. 60-39.18B.

Wilmes, Manfred, to C.A. Weidmuller KG. Guiding and marking member for electrical cables. 4,253,629, Cl. 248-68.00R.

Wilson, David R.: *See*—
Scrutton, Simon L.; Marwick, William F. G.; and Wilson, David R., 4,254,211, Cl. 430-325.000.

Wilson, James W.: *See*—
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Wilson, John R., Jr.; and Pierce, Earl W., to General Motors Corporation. Catalytic converter with dual catalyst pellet beds and reinforced plenum therebetween. 4,254,085, Cl. 422-171.000.

Wilson, Pryce. Concentrating vacuum insulated solar energy collection apparatus. 4,253,445, Cl. 126-422.000.

Wilson, Thomas G., Jr., to Bell Telephone Laboratories, Incorporated. Input surge protection for converter circuit. 4,254,443, Cl. 361-56.000.

Wilwerding, Dennis J.: *See*—
Stauffer, Norman L.; and Wilwerding, Dennis J., 4,254,330, Cl. 250-201.000.

Winckler, Wilhelm: *See*—
Bohn, Hans; and Winckler, Wilhelm, 4,254,021, Cl. 260-112.00B.

Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; Morisaki, Masuo; and Oshida, Jun-ichi, 4,254,045, Cl. 260-397.200.

Wishneusky, John A.: *See*—
Hsia, Yukun; and Wishneusky, John A., 4,254,477, Cl. 365-200.000.

Wissler, Carl R. Folding utility cart. 4,253,677, Cl. 280-40.000.

Wissner, Allan, to American Cyanamid Company. 1-Hydroxymethyl-1-oxo-prostane-derivatives of the E, A and F-series. 4,254,036, Cl. 260-340.90P.

Wissner, Allan, to American Cyanamid Company. 1-Hydroxymethyl-1-1-oxo prostane derivatives of the E and F series. 4,254,285, Cl. 568-379.000.

Witzel, Bruce E.: *See*—
Grier, Nathaniel; Dybas, Richard A.; and Witzel, Bruce E., 4,254,131, Cl. 424-267.000.

Woermann, Eduard; Knecht, Barbara; and Roshenhauer, Matthias. Diamond synthesis. 4,254,091, Cl. 423-446.000.

Wojtowicz, John A., to Olin Corporation. Method for cleaning water containing devices. 4,253,950, Cl. 210-696.000.

Wolf, Peter; and Williams, Kenneth L., to Lambert Brake Corporation. Heavy duty power valve. 4,253,496, Cl. 137-862.000.

Wolfe, Allen R., to General Electric Company. Inverted microstrip phase shifter. 4,254,383, Cl. 333-161.000.

Wolfe, Roger W.: *See*—
Kuchinsky, Saul; Wolfe, Roger W.; Maloney, Thomas C.; and Hennessey, William M., 4,254,361, Cl. 313-519.000.

Womack, James A.: *See*—
Long, Jerry M.; and Womack, James A., 4,253,568, Cl. 206-387.000.

Woods, James T.: *See*—
Acitelli, Mario A.; and Woods, James T., 4,254,186, Cl. 428-462.000.

Woodstream Corporation: *See*—
Souza, Anthony J., 4,253,264, Cl. 43-73.000.

Woodward Governor Company: *See*—
Johnson, Bruce A., 4,253,603, Cl. 236-86.000.

Woolley, Ronald L.: *See*—
Billings, Roger E.; Woolley, Ronald L.; and Anderson, Vaughn R., 4,253,428, Cl. 123-1.00A.

Wooster Brush Company, The: *See*—
Marino, Frank, 4,253,213, Cl. 15-192.000.

Work, Gerald L., to Wilbert, Inc. Burial vaults. 4,253,220, Cl. 27-35.000.

Worley, Arthur C.; and Colton, Charles B., to Exxon Research & Engineering Co. Multi-position dual disc slide valve. 4,253,487, Cl. 137-375.000.

Wormmeester, Johan G.; and Baranyai, Gyula I., to Fuelmaster Produktie Maatschappij B.V. Rotary positive displacement pump, especially gear pump. 4,253,803, Cl. 417-283.000.

Wormser, Alex F., to Wormser Engineering, Inc. Coal burning arrangement. 4,253,409, Cl. 110-347.000.

Wormser Engineering, Inc.: *See*—
Wormser, Alex F., 4,253,409, Cl. 110-347.000.

Worthen, Roger P.; and Walsh, Michael M., to Eaton Corporation. Fluid flow regulating valve and system. 4,253,491, Cl. 137-599.000.

Wright, George J.: *See*—
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,254,129, Cl. 424-267.000.
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,254,130, Cl. 424-267.000.

Wright, William E.; and Moyer, Ross, to Carrier Corporation. Method of manufacturing a heat exchanger element. 4,253,225, Cl. 29-157.30R.

Wurlitzer Company, The: *See*—
Hoskinson, William R.; and Schwartz, Harold O., 4,253,366, Cl. 84-1.030.
Hoskinson, William R., 4,253,369, Cl. 84-1.260.

Wyant, Robert E.: *See*—
Baldwin, Maynard M.; Wyant, Robert E.; and Vaaler, Luther E., 4,253,921, Cl. 204-72.000.

Xerox Corporation: *See*—
Davis, Jack R.; and Gold, Philip S., 4,254,467, Cl. 364-521.000.
Johnson, Richard V., 4,253,725, Cl. 350-6.910.
Landheer, Dolf; Hwang, Shy-Shung; Nesta, Charles; and Squassoni, Gino F., 4,254,424, Cl. 346-139.00C.
Lu, Chin H.; and Erhardt, Peter F., 4,254,205, Cl. 430-122.000.
Serino, Louis J., 4,254,301, Cl. 174-138.00G.
Tutihasi, Simpei, 4,254,199, Cl. 430-58.000.
Yeh, Keming; and Reuter, James L., 4,253,229, Cl. 29-571.000.

Yada, Kazuaki, to Sansei Seiki Co., Ltd. Automatic labeler. 4,253,902, Cl. 156-361.000.

Yagger, David F.: *See*—
Reed, Robert H.; and Yagger, David F., 4,253,325, Cl. 73-1.00C.

Yagihara, Morio; Yokota, Yukio; Ogawa, Akira; and Sawaguchi, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic silver halide light-sensitive material and color image-forming process. 4,254,212, Cl. 430-381.000.

Yamada, Shigeru: *See*—
Hiyoshi, Teruo; Nakada, Akira; and Yamada, Shigeru, 4,253,367, Cl. 84-1.220.

Yamada, Tsuneo; and Miyamoto, Yukihiko, to Trio Kabushiki Kaisha. Monostable multivibrator. 4,254,346, Cl. 307-273.000.

Yamada, Yoji; Nishimura, Sadanori; Shimizu, Takeyuki; and Maezono, Masakazu, to Honda Giken Kogyo Kabushiki Kaisha. Control apparatus for an oil pressure operated transmission in automotive vehicle. 4,253,553, Cl. 192-3.620.

Yamagami, Akio; and Kubota, Tadashi, to Matsushita Electric Industrial Co., Ltd. Electronic components assembly apparatus and method for making. 4,253,291, Cl. 53-399.000.

Yamaguchi, Shinji; Akagi, Takao; Tsuji, Takaakira; Maeda, Katsura; Kawamoto, Masao; and Kubotsu, Akira, to Kuraray Co., Ltd. Polyester synthetic fiber containing particulate material and a method for producing an irregularly uneven random surface having recesses and projections on said fiber by chemically extracting said particulate material. 4,254,182, Cl. 428-372.000.

Yamaguti, Tiyomi: *See*—
Goto, Kanji; Yamaguti, Tiyomi; Mikami, Yorihito; and Komakine, Rokuro, 4,253,646, Cl. 266-281.000.

Yamamoto, Noboru: *See*—
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Yamamoto, Takashi: *See*—
Yodogawa, Masatada; Morisawa, Matsuo; Yamamoto, Takashi; and Okutani, Katsunobu, 4,254,070, Cl. 264-61.000.

Yamamuro, Yoshio: *See*—
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Yamashita, Kiyoshi: *See*—
Masuda, Kosaku; Wada, Hajime; and Yamashita, Kiyoshi, 4,254,213, Cl. 430-381.000.

Yamashita, Sadahiko: *See*—
Saito, Mitsuo; Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,254,390, Cl. 334-85.000.
Yamasoe, Kastuyoshi: *See*—
Tsuchiya, Yasuyuki; Ichikawa, Akio; and Yamasoe, Kastuyoshi, 4,253,930, Cl. 204-181.00C.
Yamazaki, Masakazu: *See*—
Murakami, Kinshiro; Hakoyama, Atsumu; Yamazaki, Masakazu; Kanamaru, Hisanobu; Ouchi, Yasushi; and Tohkairin, Akira, 4,253,323, Cl. 72-356.000.
Yamazaki, Noboru: *See*—
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, 4,253,341, Cl. 73-861.770.
Yamazaki, Shunpei. Hetero junction semiconductor device. 4,254,429, Cl. 357-16.000.
Yamazaki, Yasuhiro; Wakahara, Yasushi; and Matsuo, Kazunori, to Kokusai Denshin Denwa Kabushiki Kaisha. Coding method for facsimile signal. 4,254,438, Cl. 358-261.000.
Yanagimoto Seisakusho Co. Ltd.: *See*—
Urano, Yoriyuki, 4,254,339, Cl. 250-459.000.
Yang, Denis C., to De Laval Separator Company, The. Milk claw. 4,253,419, Cl. 119-14.540.
Yano, Kozo: *See*—
Nakauchi, Hiroshi; Inami, Yasuhiko; and Yano, Kozo, 4,253,741, Cl. 350-357.000.
Yano, Takesh: *See*—
Ikeda, Mamoru; Yamazaki, Noboru; Fukui, Jun; Shirai, Kazuhiko; and Yano, Takesh, 4,253,341, Cl. 73-861.770.
Yaroshuk, Nicholas; Sarkozi, Miklos; Miller, Robert C.; and Kennedy, Paul G., to Westinghouse Electric Corp. Processing system for detection and the classification of flaws on metallic surfaces. 4,253,768, Cl. 356-431.000.
Yashiro, Toshiyuki: *See*—
Takei, Mitsuo; Yashiro, Toshiyuki; Owatari, Noboru; and Takagi, Kazuo, 4,253,620, Cl. 242-107.000.
Yasuda, Shigeo: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,254,398, Cl. 340-58.000.
Yasujima, Akitaka; and Ishikawa, Shingo, to Asahi-Dow Limited. Infrared interference type film thickness measuring method and instrument therefor. 4,254,337, Cl. 250-339.000.
Yazawa, Chihiro: *See*—
Koike, Wataro; Sasuga, Tadashi; and Yazawa, Chihiro, 4,254,262, Cl. 546-287.000.
Yeh, Keming; and Reuter, James L., to Xerox Corporation. Self-aligned narrow gate MESFET process. 4,253,229, Cl. 29-571.000.
Yellin, Haim: *See*—
Weiner, Ben-Zion; Suchi, Raul; Sterling, Jeffrey; and Yellin, Haim, 4,254,128, Cl. 424-267.000.
Yip, James K., to Eaton Corporation. Steering valve assembly for steering and brake system. 4,253,382, Cl. 91-516.000.
YMOS-Metallwerke Wolf & Becker GmbH & Co.: *See*—
Schwab, Dittmar; Bartels, Hermann; and Graf, Walter, 4,253,320, Cl. 70-276.000.
Yoda, Haruo; and Motoike, Jun, to Hitachi, Ltd. Image data processor. 4,254,400, Cl. 340-146.3MA.
Yoda, Makoto: *See*—
Imai, Masafumi; Ueno, Hiroshi; Inaba, Naomi; Yoda, Makoto; and Wada, Shozo, 4,253,984, Cl. 252-429.00B.
Yodogawa, Masatada; Morisawa, Matsuo; Yamamoto, Takashi; and Okutani, Katsunobu, to TDK Electronics Company, Limited. Process for producing sintered body of ceramic composition for voltage non-linear resistor. 4,254,070, Cl. 264-61.000.
Yokono, Koujiro; and Nishide, Katsuhiko, to Canon Kabushiki Kaisha. Hologram and method of production thereof from polysaccharide recording layer. 4,254,193, Cl. 430-1.000.
Yokota, Yukio: *See*—
Yagihara, Morio; Yokota, Yukio; Ogawa, Akira; and Sawaguchi, Hiroshi, 4,254,212, Cl. 430-381.000.
Yoshida Kogyo K.K.: *See*—
Hosooka, Syuichi, 4,253,688, Cl. 292-52.000.
Yoshikane, Akishige, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal transmission system in a digital controller system. 4,254,499, Cl. 370-85.000.
Yoshikawa, Shigeharu: *See*—
Okada, Shigetaka; Kitahata, Sumio; Yoshikawa, Shigeharu; and Miyake, Kentaro, 4,254,227, Cl. 435-97.000.
Yoshioka, Hiroshi: *See*—
Shiga, Akinobu; Kakugo, Masahiro; Sadatoshi, Hajime; Wakamatsu, Kazuki; and Yoshioka, Hiroshi, 4,254,237, Cl. 525-323.000.
Yoshioka, Tomoaki; and Fujioka, Keiji, to Honda Giken Kogyo Kabushiki Kaisha; and Ohtsu Tire Kabushiki Kaisha. Low pressure cordless and tubeless tire. 4,253,512, Cl. 152-353.00G.
Youden, David H., to Cone-Blanchard Machine Company. Drive system for multiple spindle machine tool. 4,253,359, Cl. 82-21.00B.
Young, David E., to Schlumberger Technology Corporation. Retainer valve system. 4,253,525, Cl. 166-336.000.
Young, David W. Novel pressure sensitive adhesives. 4,254,251, Cl. 525-451.000.
Young Dental Manufacturing Company, Inc.: *See*—
Bailey, Ronald L., 4,253,832, Cl. 433-115.000.
Young, Kenneth: *See*—
Jodrey, Robert M.; and Young, Kenneth, 4,253,904, Cl. 156-497.000.
Yu, Jing-Peir: *See*—
Bromley, James E.; and Yu, Jing-Peir, 4,254,181, Cl. 428-371.000.
Yui, Makoto; Sadakane, Katsuyuki; and Okazaki, Hidemasa. Escape device for use in multistoried buildings. 4,253,545, Cl. 182-240.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Kuhnle, Willi; and Wendler, Heinz, 4,253,346, Cl. 74-861.000.
Zakaria, Moneeb; and Slovinsky, Manuel, to Nalco Chemical Company. Water-based anti-blemish paint. 4,253,994, Cl. 260-5.000.
Zaromb, Solomon. Electrochemical power generation apparatus and methods. 4,254,190, Cl. 429-15.000.
Zemlyanov, Leonid S.: *See*—
Shulzhenko, Boris A.; Belyaev, Evgeny A.; Lipov, Jury N.; Egorov, Igor N.; Mikaelian, Georgy A.; Zemlyanov, Leonid S.; and Krutkov, Anatoly F., 4,253,411, Cl. 111-2.000.
Zettel, Martin: *See*—
Laux, Walter; Zettel, Martin; and Ambrosius, Erich, 4,253,410, Cl. 110-331.000.
Zibold, Karl, to Robert Bosch GmbH. RPM Regulator for fuel injection pumps with an adaptation of the injection quantity. 4,253,438, Cl. 123-366.000.
Ziegenhain, William C.; Jackson, R. Tom; and Rose, LeRoy, to Conoco, Inc. Removal of catalyst from ethoxylates by centrifugation. 4,254,287, Cl. 568-621.000.
Zindler, Hugh A. Clutch-brake mechanism. 4,253,556, Cl. 192-17.00R.
Zoecon Corporation: *See*—
Kohn, Gustave K.; and Baer, Ted A., 4,254,264, Cl. 546-291.000.
Zontelli, Gary R. Method of trimming printed circuit boards. 4,253,360, Cl. 83-39.000.
Zorgniotti, Adrian W.; and Sealfon, Andrew I., to Repro Med Systems, Inc. Method and device for contributing to the obviating of male infertility. 4,253,464, Cl. 128-400.000.
Zweegers, Petrus W. Mowing machine. 4,253,294, Cl. 56-13.600.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 3RD DAY OF MARCH, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Athey, Stuart E.: *See*—
Fraula, Louis F.; and Athey, Stuart E., Re. 30,537, Cl. 134-10.000.

Buckner, Spencer P., to TRW Inc. Flapper valve with independent spring action. Re. 30,532, Cl. 137-512.100.

Cavitron Corporation: *See*—
Perdreaux, Rene J., Jr., Re. 30,536, Cl. 433-86.000.

DeLuca, Hector F.; Schnoes, Heinrich K.; and Lam, Hing-Yat, to Wisconsin Alumni Research Foundation. 3-Deoxy-1α-hydroxycholecalciferol. Re. 30,538, Cl. 260-397.200.

Dushku, Victor A. Manually operated log breaking device. Re. 30,533, Cl. 254-113.000.

Fraula, Louis F.; and Athey, Stuart E., to Hobart Corporation. Method for rinsing and chemically sanitizing food ware items. Re. 30,537, Cl. 134-10.000.

Harrison, George C., to Polaroid Corporation. Electronic flash inhibit arrangement. Re. 30,534, Cl. 354-139.000.

Hobart Corporation: *See*—
Fraula, Louis F.; and Athey, Stuart E., Re. 30,537, Cl. 134-10.000.

Kuroishi, Shoji; and Mochizuki, Manabu, to Ricoh Co., Ltd. Developing device in electrophotographic copying apparatus. Re. 30,535, Cl. 355-10.000.

Lam, Hing-Yat: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lam, Hing-Yat, Re. 30,538, Cl. 260-397.200.

Mochizuki, Manabu: *See*—
Kuroishi, Shoji; and Mochizuki, Manabu, Re. 30,535, Cl. 355-10.000.

Perdreaux, Rene J., Jr., to Cavitron Corporation. Ultrasonic device and method. Re. 30,536, Cl. 433-86.000.

Polaroid Corporation: *See*—
Harrison, George C., Re. 30,534, Cl. 354-139.000.

Ricoh Co., Ltd.: *See*—
Kuroishi, Shoji; and Mochizuki, Manabu, Re. 30,535, Cl. 355-10.000.

Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; and Lam, Hing-Yat, Re. 30,538, Cl. 260-397.200.

Spector, Donald. Inflatable terrarium assembly. Re. 30,531, Cl. 47-69.000.

TRW Inc.: *See*—
Buckner, Spencer P., Re. 30,532, Cl. 137-512.100.

Wisconsin Alumni Research Foundation: *See*—
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Adams, John H. Protective bumper sleeve for sledge hammer handles. 258,413, 3-3-81, Cl. D8-80.000.

Aderman, Wayne L., to International Business Machines Corporation. Data processor. 258,432, 3-3-81, Cl. D14-43.000.

Ahn, Chong T. Music box. 258,450, 3-3-81, Cl. D17-24.000.

Alsman, Bill R. Dual head lamp assembly. 258,466, 3-3-81, Cl. D26-35.000.

Alvarez, Teresita E.; Frank, David J.; and Carroll, Barry G., to Burlington Industries, Inc. Pantyhose package. 258,423, 3-3-81, Cl. D9-305.000.

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Beehler, Charles A.; Brown, Ernest R.; Hawthorne, Allen D.; and Hofland, Robert M., to International Business Machines Corporation. Electrophotographic apparatus or similar device. 258,446, 3-3-81, Cl. D16-30.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Portable calculator. 258,451, 3-3-81, Cl. D18-7.000.

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Nattrass, Ray A. Compost retainer. 258,409, 3-3-81, Cl. D7-194.000.
Newman, Perrin R. Food cooling device. 258,407, 3-3-81, Cl. D7-17.000.
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Pape, John A., to Hilary Page "Sensible" Toys Limited. Toy truck. 258,458, 3-3-81, Cl. D21-134.000.
Perez, Salvador V. Child's combined barberchair and adjustable cheekrest. 258,397, 3-3-81, Cl. D6-9.000.
Plummer, James E. Combined bottle and stopper. 258,420, 3-3-81, Cl. D9-385.000.
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Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and anti-atherosclerotic 2- or 3-(monosubstituted-amino) phenyl compounds. T100,403, 3-3-81, Cl. 424-319.000.

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90 4,253,851
126 4,253,852
226 4,253,853
227 4,253,854
290 4,253,855
374 4,253,856
400 4,253,857
419 4,253,858

CLASS 56

13.6 4,253,294
15.6 4,253,295
238 4,253,296

CLASS 57

5 4,253,297
13 4,253,298
246 4,253,299

CLASS 60

39.18 B 4,253,300
39.46 P 4,253,301
276 4,253,302
517 4,253,303
527 4,253,304
550 4,253,305
561 4,253,306
641 4,253,307
664 4,253,308

CLASS 62

2 4,253,309
6 4,253,859
79 4,253,310
148 4,253,311
238 E 4,253,312
259 B 4,253,313
332 4,253,314
404 4,253,315

CLASS 65

27 4,253,860
30 E 4,253,861
75 4,253,862
181 4,253,863

CLASS 66

14 4,253,316
186 4,253,317

CLASS 69

9.1 4,253,318

CLASS 70

264 4,253,319
276 4,253,320
456 R 4,253,321

CLASS 71

90 4,253,864
91 4,253,865
94 4,253,866

CLASS 72

245 4,253,322
356 4,253,323
393 4,253,324

CLASS 73

1 C 4,253,325
10 4,253,326
38 4,253,327
40.7 4,253,328
63 4,253,329
113 4,253,330
141 A 4,253,331
224 4,253,332
253 4,253,333
362 AR 4,253,334
384 4,253,335
422 R 4,253,336
599 4,253,337
626 4,253,338
732 4,253,339
861.12 4,253,340
861.77 4,253,341

CLASS 74

89 4,253,342
665 GA 4,253,345
861 4,253,346
862 4,253,347
866 4,253,348
878 4,253,349

CLASS 75

35 4,253,867
59 4,253,868
134 C 4,253,869
159 4,253,870
166 B 4,253,871
172 R 4,253,872
175.5 4,253,873
246 4,253,874

CLASS 81

3 R 4,253,350
3.38 A 4,253,351
3.46 R 4,253,352
57.34 4,253,354
121 R 4,253,353
167 4,253,355
177 N 4,253,356
180 R 4,253,357

CLASS 82

5 4,253,358
21 B 4,253,359

CLASS 83

39 4,253,360
90 4,253,361
100 4,253,362
114 4,253,363
217 4,253,364
755 4,253,365

CLASS 84

1.03 4,253,366
1.22 4,253,367
1.24 4,253,368
1.26 4,253,369
198 4,253,370
267 4,253,371
322 4,253,372
454 4,253,373
455 4,253,374

CLASS 86

1 R 4,253,375

CLASS 89

33 BB 4,253,376
163 4,253,377
188 4,253,378

CLASS 91

35 4,253,379
503 4,253,380
506 4,253,381
516 4,253,382

CLASS 98

40 R 4,253,384

CLASS 99

281 4,253,385
453 4,253,386

CLASS 100

5 4,253,387
4,253,389
39 4,253,388
45 4,253,390
154 4,253,391
155 R 4,253,392

CLASS 101

35 4,253,393
250 4,253,394
292 4,253,395
409 4,253,396
450.1 4,253,397

CLASS 104

2 4,253,398

CLASS 105

62 R 4,253,399
282 P 4,253,400
329 R 4,253,401

CLASS 106

1.26 4,253,875
14.42 4,253,876
18.35 4,253,877
52 4,253,878
165 4,253,879

CLASS 108

27 4,253,402

CLASS 110

104 B 4,253,403
188 4,253,404
222 4,253,405
241 4,253,406
267 4,253,407
331 4,253,410
346 4,253,408
347 4,253,409

CLASS 111

2 4,253,411
86 4,253,412

CLASS 112

262.3 4,253,413

CLASS 116

63 P 4,253,415

CLASS 118

401 4,253,416
733 4,253,417

CLASS 119

2 4,253,418
14.08 4,253,421
14.54 4,253,419
14.55 4,253,420
17 4,253,422
29 4,253,423
61 4,253,424

CLASS 122

4 D 4,253,425
13 R 4,253,426
26 4,253,427

CLASS 123

1 A 4,253,428
41.35 4,253,429
41.38 4,253,430
41.72 4,253,431
52 M 4,253,432
73 R 4,253,433
90.15 4,253,434
193 P 4,253,435
198 A 4,253,436
325 4,253,437
366 4,253,438
368 4,253,439
442 4,253,440
445 4,253,441
609 4,253,443
618 4,253,442

CLASS 126

6 4,253,444
422 4,253,445
435 4,253,446

CLASS 128

4 4,253,448
6 4,253,447
24 R 4,253,449
91 R 4,253,450
132 D 4,253,451
152 4,253,452
200.19 4,253,453
202.26 4,253,454
204.26 4,253,455
214 R 4,253,456
227 4,253,457
272 4,253,458
272.3 4,253,459
283 4,253,460
287 4,253,461
303 R 4,253,462
348 4,253,463
400 4,253,464
419 PG 4,253,466
630 4,253,467
726 4,253,468
736 4,253,469
745 4,253,470

CLASS 130

22 R 4,253,471
27 S 4,253,472

CLASS 131

2 4,253,473
10.5 4,253,508
140 P 4,253,474
173 4,253,475
261 B 4,253,476

CLASS 132

91 4,253,477

CLASS 134

10 Re.30,537

CLASS 135

68 4,253,478
69 4,253,479

CLASS 136

249 4,253,882
256 4,253,881
259 4,253,880

CLASS 137

102 4,253,480
112 4,253,481
117 4,253,482
240 4,253,483
269 4,253,484
315 4,253,485
343 4,253,486
375 4,253,487
382 4,253,488
512.1 Re.30,532
527 4,253,489
590 4,253,490
599 4,253,491
601 4,253,492
625.18 4,253,493
625.23 4,253,494
833 4,253,495
862 4,253,496

CLASS 138

97 4,253,497

CLASS 139

224 R 4,253,498

CLASS 140

92.7 4,253,499

CLASS 141

1 4,253,500
27 4,253,501
47 4,253,502
59 4,253,503
106 4,253,504
147 4,253,505

CLASS 144

221 4,253,506

CLASS 148

13.1 4,253,884
4,253,885
103 4,253,883
105 4,253,886
175 4,253,887
187 4,253,888

CLASS 149

47 4,253,889

CLASS 150

1 4,253,507

CLASS 152

9 4,253,510
330 RF 4,253,511
353 G 4,253,512
354 R 4,253,513
405 4,253,514

CLASS 156

55 4,253,890
60 4,253,891
84 4,253,892
112 4,253,893
163 4,253,895
175 4,253,894
231 4,253,896
256 4,253,897
272 4,253,898
277 4,253,899
309.3 4,253,900
327 4,253,901
361 4,253,902
389 4,253,903
497 4,253,904
523 4,253,905
584 4,253,906
633 4,253,910
643 4,253,907
645 4,253,908
654 4,253,909

CLASS 162

30 R 4,253,911
76 4,253,912
198 4,253,913

CLASS 165

61 4,253,515
78 4,253,516
97 4,253,517
105 4,253,518
110 4,253,519
166 4,253,520

CLASS 166

123 4,253,521
278 4,253,522
299 4,253,523
325 4,253,524
336 4,253,525

CLASS 168

4 4,253,526

CLASS 169

57 4,253,527

CLASS 172

386 4,253,528
831 4,253,529

CLASS 174

15 S 4,254,299
50.64 4,254,300
138 G 4,254,301

CLASS 175

25 4,253,530
56 4,253,531
107 4,253,532
329 4,253,533

CLASS 176

87 4,253,914

CLASS 177

241 4,253,534

CLASS 179

1 ST 4,254,302
1 VL 4,254,303
2 DP 4,254,304
16 F 4,254,305
99 R 4,254,306
148 R 4,254,308

CLASS 180

6.24 4,253,535
9.5 4,253,536
90 4,253,537
139 4,253,540
168 4,253,541

CLASS 181

119 4,253,538
120 4,253,539
272 4,253,542
286 4,253,543

CLASS 182

3 4,253,544
20 4,253,546
115 4,253,547
142 4,253,548
150 4,253,549
239 4,253,643
240 4,253,545

CLASS 188

71.9 4,253,550
134 4,253,551
218 A 4,253,552

CLASS 192

3.62 4,253,553
8 R 4,253,554
13 R 4,253,555
17 R 4,253,556
54 4,253,557

CLASS 193

35 A 4,253,558

CLASS 198

345 4,253,559
479 4,253,560

CLASS 200

5 A 4,254,309
6 R 4,254,310
61.07 4,254,311
61.25 4,254,312
67 D 4,254,313
144 R 4,254,314
153 J 4,254,315
308 4,254,316
314 4,254,317

CLASS 202

262 4,253,915

CLASS 204

14 R 4,253,916
16 4,253,917
37 R 4,253,919
43 G 4,253,920
72 4,253,921
98 4,253,922
4,253,923
4,253,924
129 4,253,925
157.1 R 4,253,926
159.17 4,253,927
159.22 4,253,918
180 P 4,253,928
4,253,929
181 C 4,253,930
192 SP 4,253,931
195 S 4,253,934
253 4,253,932
293 4,253,933
295 4,253,935
296 4,253,936

CLASS 206

44 R 4,253,561
45.33 4,253,562
63.3 4,253,563
183 4,253,564
190 4,253,565
220 4,253,566
387 4,253,567
4,253,568
391 4,253,569
4,253,570
444 4,253,571
538 4,253,572

CLASS 208

8 LE 4,253,937
11 R 4,253,938
120 4,253,939

CLASS 209

3 4,253,940
17 4,253,941
4,253,942
44 4,253,943
166 4,253,944
211 4,253,945
283 4,253,946
525 4,253,573
668 4,253,574

CLASS 210

44 4,253,949
159 4,253,952
168 4,253,953
4,253,954
172 4,253,955
188 4,253,956
195.3 4,253,957
232 4,253,959
373 4,253,960
380.3 4,253,961
414 4,253,962
500.2 4,253,963
513 4,253,964
519 4,253,965
610 4,253,947
4,253,966
634 4,253,948
645 4,253,967
696 4,253,950
698 4,253,968
699 4,253,969
728 4,253,958
731 4,253,970
749 4,253,951
759 4,253,971

CLASS 211

13 4,253,575
60 R 4,253,576
118 4,253,577
208 4,253,578

CLASS 215

228 4,253,580
344 4,253,581

CLASS 219

10.55 D 4,254,318
10.55 F 4,254,319
69 C 4,254,320
72 4,254,321
110 4,254,323
122 4,254,322
361 4,254,324
413 4,254,325
536 4,254,326

CLASS 220

269 4,253,582
319 4,253,583
359 4,253,584

CLASS 221

242 4,253,585
278 4,253,586

CLASS 222

151 4,253,587
153 4,253,588
390 4,253,589
590 4,253,590
636 4,253,591

CLASS 224

198 4,253,592
253 4,253,593
318 4,253,594
328 4,253,595

CLASS 225

18 4,253,596

CLASS 226

40 4,253,597

CLASS 227

119 4,253,598

CLASS 228

49 B 4,253,599

CLASS 229

2.5 R 4,253,600
22 4,253,601
31 R 4,253,602

CLASS 235

92 CC 4,254,327
92 PE 4,254,328
379 4,254,329

CLASS 236

86 4,253,603
87 4,253,604

CLASS 238

8 4,253,605

CLASS 239

63 4,253,606
185 4,253,607
206 4,253,608
327 4,253,609
430 4,253,610
602 4,253,611
672 4,253,612

CLASS 241

16 4,253,613
24 4,253,614
36 4,253,615
46 B 4,253,616

CLASS 242

55 4,253,617
84.1 J 4,253,618
86.5 R 4,253,619
107 4,253,620
107.4 A 4,253,621
4,253,622
4,253,623
128 4,253,624

CLASS 244

4 A 4,253,625
135 R 4,253,626
145 4,253,627
151 A 4,253,628

CLASS 248

68 R 4,253,629
346 4,253,630
363 4,253,631
405 4,253,632
475 B 4,253,633
604 4,253,634

CLASS 249

47 4,253,635
139 4,253,636
158 4,253,637

CLASS 250

201 4,254,330
205 4,254,331
211 R 4,254,332
221 4,254,333
231 R 4,254,334
277 R 4,254,335
294 4,254,336
315.2 4,254,033
339 4,254,337
340 4,254,338
459 4,254,339
492 A 4,254,340
519 4,254,341
561 4,254,342

CLASS 251

1 A 4,253,638
44 4,253,639
56 4,253,640
306 4,253,641
355 4,253,642

CLASS 252

8.1 4,253,972
8.55 D 4,253,974
32.7 E 4,253,975
4,253,978
33 4,253,976
33.4 4,253,977
33.6 4,253,979
34 4,253,980
46.7 4,253,973
49.6 4,253,981
51.5 R 4,253,982
70 4,253,983
301.1 W 4,253,985
373 4,253,986
429 B 4,253,984
429 R 4,253,987
435 4,253,988
455 R 4,253,990
4,253,991
455 Z 4,253,989
477 R 4,253,992
548 4,253,993

CLASS 254

113 Re.30,533

CLASS 260

5 4,253,994
6 4,253,995
4,253,996
8 4,253,997
4,253,998
17 R 4,253,999
18 PN 4,254,000
22 D 4,254,001
23 S 4,254,028
23 ST 4,254,002
29.6 H 4,254,005
29.6 NR 4,254,003
29.6 R 4,254,004
31.8 M 4,254,006
33.4 P 4,254,007
33.4 R 4,254,008
38 4,254,019
40 R 4,254,009
4,254,011
40 TN 4,254,010
42.18 4,254,012
42.47 4,254,013
45.7 PH 4,254,014
45.75 S 4,254,017
45.85 A 4,254,016
45.85 H 4,254,020
45.85 R 4,254,018
45.9 R 4,254,015
112 B 4,254,021
112 R 4,254,022
112.5 R 4,254,023
4,254,024
144 4,254,025
158 4,254,026
207 4,254,027
239.1 4,254,029
243.3 4,254,031
315 4,254,032
338 4,254,034
340.5 R 4,254,035
340.9 P 4,254,036
345.1 4,254,037
4,254,038
346.11 4,254,039
346.22 4,254,040
4,254,041
4,254,042
347.4 4,254,043
347.8 4,254,044
397.2 Re.30,538
4,254,045
429.7 4,254,046
455 R 4,254,047
465 D 4,254,049
4,254,050
4,254,051
4,254,052
465 F 4,254,048
501.15 4,254,053
510 4,254,054
513.5 4,254,055
543 F 4,254,030
563 P 4,254,058
927 R 4,254,073
931 4,254,063

CLASS 261

64 E 4,254,064

CLASS 264

2.5 4,254,065
13 4,254,067
37 4,254,068
51 4,254,069
61 4,254,070
102 4,254,071
132 4,254,074
154 4,254,075
206 4,254,076
210.3 4,254,072
225 4,254,077
320 4,254,078
537 4,254,079
4,254,080

CLASS 266

44 4,253,644
211 4,253,645
271 4,253,647
281 4,253,646

CLASS 269

4 4,253,648
45 4,253,649
87.2 4,253,650

CLASS 270

58 4,253,651

CLASS 271

8 R 4,253,652
22 4,253,653
155 4,253,654
216 4,253,655
293 4,253,656

CLASS 272

14 4,253,657
33 R 4,253,658
52.5 4,253,659
67 4,253,660
96 4,253,661
123 4,253,662
136 4,253,663

CLASS 273

29 A 4,253,664
63 G 4,253,665
80.1 4,253,666
168 4,253,667
201 4,253,668
368 4,253,669
407 4,253,670
411 4,253,671
424 4,253,672
428 4,253,673

CLASS 277

5 4,253,674
30 4,253,675
34.6 4,253,676

CLASS 280

40 4,253,677
42 4,253,678
405 R 4,253,679
479 R 4,253,680
804 4,253,681

CLASS 282

27.5 4,253,682

CLASS 285

13 4,253,683
4,253,684
41 4,253,685
249 4,253,686
332.3 4,253,687

CLASS 292

52 4,253,688
338 4,253,689
354 4,253,690

CLASS 294

1 BA 4,253,691
71 4,253,692
86 CG 4,253,693
93 4,253,694
95 4,253,695
103 CG 4,253,696
115 4,253,697

CLASS 296

1 C 4,253,698
25 4,253,699
190 4,253,700

CLASS 297

220 4,253,701
468 4,253,702

CLASS 299

5 4,253,703
14 4,253,704
76 4,253,705
94 4,253,706

CLASS 303

6 C 4,253,707

CLASS 305

47 4,253,708

CLASS 307

41 4,254,343
86 4,254,344
221 D 4,254,345
273 4,254,346
297 4,254,347
426 4,254,348

CLASS 308

6 C 4,253,709
8.2 4,253,710
36.1 4,253,711
183 4,253,712
187.1 4,253,713
238 4,253,714

CLASS 310

13 4,254,349
4,254,350
45 4,254,351
71 4,254,352
239 4,254,353
329 4,254,354

CLASS 312

21 4,253,715
100 4,253,716

CLASS 313

25 4,254,355
217 4,254,356
268 4,254,357
318 4,254,358
386 4,254,359
395 4,254,360
519 4,254,361

CLASS 315

219 4,254,362
248 4,254,363
311 4,254,364
371 4,254,365
400 4,254,366

CLASS 318

314 4,254,367
603 4,254,368
654 4,254,369
685 4,254,370
4,254,371

CLASS 323

277 4,254,372

CLASS 324

54 4,254,374
115 4,254,375
142 4,254,376
321 4,254,373
453 4,254,377

CLASS 329

137 4,254,378

CLASS 330

268 4,254,379
275 4,254,380
301 4,254,381

CLASS 331

116 R 4,254,382

CLASS 333

1.1 4,254,384
104 4,254,385
128 4,254,386
161 4,254,383
194 4,254,387
195 4,254,388

CLASS 334

7 4,254,389
85 4,254,390

CLASS 335

119 4,254,391
202 4,254,392
209 4,254,393

CLASS 337

231 4,254,394

CLASS 338

42 4,254,395

CLASS 339

14 T 4,253,717
59 R 4,253,718
61 M 4,253,719
75 M 4,253,720
91 R 4,253,721
99 R 4,253,722

CLASS 340

52 R 4,254,396
56 4,254,397
58 4,254,398
146.3 MA 4,254,399
4,254,400
147 C 4,254,401
310 R 4,254,402
4,254,403
311 4,254,404
321 4,254,405
347 NT 4,254,406
365 P 4,254,407
366 B 4,254,408
512 4,254,410
517 4,254,411
525 4,254,412
561 4,254,413

627 4,254,414
679 4,254,415
728 4,254,416
731 4,254,409

CLASS 343

100 SA 4,254,417
112 CA 4,254,418
715 4,254,419
4,254,420
754 4,254,421
792 4,254,422
883 4,254,423

CLASS 346

139 C 4,254,424
162 4,254,425

CLASS 350

3.72 4,253,723
6.8 4,253,724
6.91 4,253,725
87 4,253,726
96.15 4,253,727
4,253,728
96.20 4,253,729
96.21 4,253,730
96.34 4,253,731
140 4,253,732
276 R 4,253,737
304 4,253,738
310 4,253,739
350 R 4,253,740
357 4,253,741
4,253,742
380 4,253,733
386 4,253,734
409 4,253,735
422 4,253,736

CLASS 351

7 4,253,743
16 4,253,744
45 4,253,745
168 4,253,746
169 4,253,747

CLASS 352

82 4,253,748
187 4,253,749

CLASS 354

23 D 4,253,750
25 4,253,751
4,253,752
106 4,253,753
139 Re.30,534
154 4,253,754
242 4,253,755
289 4,253,756
304 4,253,757

CLASS 355

3 DR 4,253,758
10 Re.30,535
14 CU 4,253,760
14 SH 4,253,759
15 4,253,761
55 4,253,762
57 4,253,763

CLASS 356

225 4,253,764
328 4,253,765
418 4,253,766
426 4,253,767
431 4,253,768
432 4,253,769
433 4,253,770

CLASS 357

2 4,254,426
13 4,254,427
15 4,254,428
16 4,254,429
22 4,254,430
82 4,254,431

CLASS 358

10 4,254,432
105 4,254,433
147 4,254,434
155 4,254,435
157 4,254,436
211 4,254,437
261 4,254,438
265 4,254,439

CLASS 360

76 4,254,440
88 4,254,441

CLASS 361

56 4,254,442
4,254,443
82 4,254,444
383 4,254,446
386 4,254,447
392 4,254,445
409 4,254,448

CLASS 362

33 4,254,449
92 4,254,450
103 4,254,451
154 4,254,452
240 4,254,453
282 4,254,454
296 4,254,455
300 4,254,456
367 4,254,457

CLASS 363

13 4,254,458
24 4,254,459

CLASS 364

104 4,254,460
200 4,254,461
4,254,462
4,254,463
4,254,464
453 4,254,465
477 4,254,466
521 4,254,467
523 4,254,468
571 4,254,469
577 4,254,470
784 4,254,471
900 4,254,472
4,254,473
4,254,474
4,254,475

CLASS 365

49 4,254,476
200 4,254,477

CLASS 366

89 4,253,771
130 4,253,772
247 4,253,773

CLASS 367

2 4,254,478
35 4,254,479
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162 4,253,797
213 R 4,253,798

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D2—	235	258,395		70	258,408		378	258,419		72	258,434		30	258,446		134	258,458
	319	258,396		194	258,409		385	258,420		94	258,435		39	258,447		244	258,459
D6—	9	258,397		207	258,410		416	258,422	D15—	7	258,436		65	258,448			258,460
	14	258,398	D8—	04	258,411	D10—	118	258,424		9.1	258,437	D17—	14	258,449	D23—	2	258,461
		258,399		21	258,412	D12—	92	258,425		9.2	258,438		24	258,450		3	258,462
	57	258,400		80	258,413		111	258,426			258,439	D18—	7	258,451	D25—	2	258,463
	63	258,401		98	258,414		156	258,427			258,440	D19—	3	258,452		16	258,464
	68	258,402		323	258,415		205	258,428			258,441			258,453		90	258,465
	97	258,403		327	258,416	D13—	28	258,429		123	258,442		42	258,454	D26—	35	258,466
	137	258,404			258,417	D14—	36	258,430		136	258,443	D20—	4	258,455		45	258,467
	164	258,405		382	258,418		42	258,431	D16—	01	258,444	D21—	90	258,456	D27—	14	258,468
	202	258,406	D9—	305	258,423		43	258,432		02	258,445		133	258,457		47	258,469
D7—	17	258,407		370	258,421		70	258,433									

CLASSIFICATION OF PLANTS

P.—	7	4,659			4,662		9	4,657		11	4,658		23	4,660		43	4,661

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48 : Re.30,532
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DESIGN PATENTS

05	:	258,410			258,426			258,446	18	:	258,395
06	:	258,397			258,428	09	:	258,448	21	:	258,449
		258,400			258,442			258,469	25	:	258,427
		258,408			258,450	12	:	258,462	26	:	258,416
		258,411			258,459	16	:	258,454			258,417
		258,412			258,460	17	:	258,398			258,435
		258,413			258,463			258,399	27	:	258,432
		258,415			258,466			258,433			258,452
		258,418	08	:	258,414			258,465			258,453

29	:	258,407			258,422
34	:	258,404	39	:	258,420
		258,461			258,443
36	:	258,406	40	:	258,436
		258,423			258,468
		258,429	45	:	258,419
		258,431	47	:	258,396
37	:	258,401			258,402
		258,405	48	:	258,467

PLANT PATENTS

6	:	4,661	06	:	4,657			4,659			4,662

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

6	:	T100,402	12	:	T100,405	36	:	T100,403	42	:	T100,401	47	:	T100,404	

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